# Sexually Transmitted Infections (STI) Surveillance Report

## Alberta – 1998 to 2002

*Disease Control and Prevention Branch*

Alberta
HEALTH AND WELLNESS

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# Executive Summary

The numbers of notifiable sexually transmitted infections (STI) declined to a low in 1997 but have risen progressively in Alberta during 1998 to 2002. This is similar to national and international trends and is thought to be related to a rise in unsafe sexual practices owing to complacency around infection with human immunodeficiency virus (HIV). In fact, by 2002, sexually transmitted infections (STI) accounted for more than fifty percent of all reportable communicable diseases in Alberta.

STI affects both genders; however, males tend to have higher rates of reported gonorrhea and infectious syphilis, while females have higher rates of genital chlamydia infection. Rates of reported nongonococcal urethritis (NGU) infection, which affects males only, are higher among males than rates of mucopurulent cervicitis (MPC), which affects only females. All age groups are affected by STI, but the majority of those infected are in the 15 – 29 year age group. Although most of those infected with STI identify themselves as Caucasian, Aboriginals are disproportionately affected by all STI except syphilis. This is particularly evident with reported gonorrhea infection, and to a lesser extent, with reported chlamydia infection.

During 1998 to 2002 there were three STI outbreaks recorded. Two of these were gonorrhea outbreaks that involved both a large urban region and a rural region. The third outbreak involved infectious syphilis and affected a second large urban region. The response to these outbreaks was successful in terminating the rural gonorrhea outbreak; however, work towards terminating the gonorrhea and syphilis outbreaks in the two urban regions continued into 2003.

Recently there have been cases of infectious syphilis that have been locally acquired. This is a change from previous years when cases had been linked to sources outside of the province.

The vast majority of individuals with STI were successfully treated with antibiotics recommended by the *Alberta Treatment Guidelines for Sexually Transmitted Diseases*[1]. In addition to following guidelines, all cases of syphilis in Alberta have been treated in consultation with a STD infectious disease specialist. Gonorrhea continues to be susceptible to the first-line antibiotics recommended in Alberta. However, nationally and internationally, rising drug resistance in this organism emphasizes the need to adhere to the treatment guidelines and to continue the monitoring of antimicrobial resistance.

Although it is impossible to locate all sexual partners at risk of infection, the partner notification work done in Alberta is successful in locating a majority of sexual partners. This has resulted in finding and treating new cases of STI. This partner notification work remains an integral component of STI control.

Hospitalizations for pelvic inflammatory disease (PID), a possible complication of STI, have declined since 1997. Unfortunately, it is impossible to know how much of this decline may be a consequence of successful case finding and treatment. This is owing to the possibility that the decrease may largely reflect a change in medical practice from "in-patient" to "out-patient" care.

The STD/HIV toll-free telephone information line continues to be a valuable resource in Alberta. Although the Internet as a gateway to other information sources is more readily available than in the past, access to this technology is not equally distributed across the province. Therefore, this telephone line provides a source of accurate information regarding STI to all Albertans and allows the opportunity to speak to a registered nurse.

The Alberta Blood-Borne Pathogen (BBP)/Sexually Transmitted Infections (STI) (2004-2010) strategy currently under development will address the overlapping issues and prevention of BBP and STI. The strategy will involve the participation of Alberta Health and Wellness and stakeholders and establish measurable targets in the area of prevention by the year 2010.

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# Acknowledgments

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The information necessary to produce this report has been made available as a result of continued commitment to control sexually transmitted infection in Alberta by the STD Clinics, nurses and physicians throughout the province's health regions, and by the Provincial Laboratories of Public Health. Production of this report has also been assisted by staff of both the Health Surveillance and Disease Control and Prevention Branches of the Population Health Division of Alberta Health and Wellness. Efforts by all these individuals/organizations are gratefully acknowledged.

# 1 Introduction

## 1.1 Sexually Transmitted Infections in Alberta

Sexually transmitted infections (STI) are a group of infections that are spread through unprotected sexual contact. STI generally infect the genital areas, anus and mouth, but can spread to other body parts if left untreated. There are several infectious organisms including bacteria, viruses, protozoa and ectoparasites that cause STI. While most of these infections are transmitted from person to person through intimate sexual contact, some infections, such as syphilis and human immunodeficiency virus (HIV), can be transmitted through infected blood, such as when sharing needles and other injection drug use equipment. Some STI may also be transmitted from mother to infant, either during the birth process or during pregnancy, and can seriously affect the health of newborns. Many STI are asymptomatic which may result in delayed diagnosis and treatment. STI may result in serious complications including infertility, ectopic pregnancy, cancer and even death. The presence of an STI increases the risk of acquisition and transmission of HIV. People of all backgrounds, ages and socioeconomic status may be affected by STI.

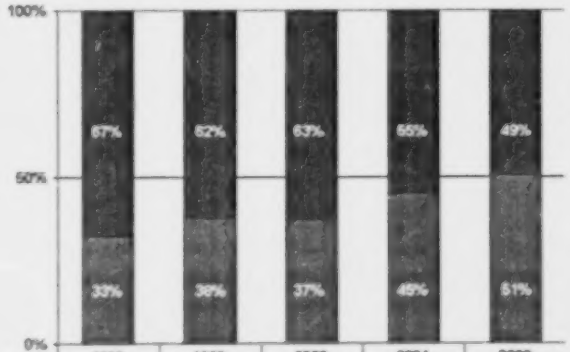
A comprehensive program including diagnosis, treatment, partner notification, prevention, surveillance, research and education is necessary to control and manage STI. In Alberta, this is provided in partnership between the Disease Control and Prevention Branch of Alberta Health and Wellness and the regional health authorities. Patient care services related to STI were divested to the regional health authorities in 1997, with the Disease Control and Prevention Branch continuing to coordinate case management and partner notification. Specialized sexually transmitted disease (STD) clinics in Calgary, Edmonton and Fort McMurray are involved with diagnosis and treatment of STI and participate in research, prevention, and educational strategies directed at both healthcare professionals and the general public. A toll-free, province-wide information line makes information regarding STI, as well as HIV and AIDS, accessible to all Albertans.

The actual numbers of individuals affected by STI are not known, except for those who are diagnosed with an infection that is considered "reportable" as defined by the Public Health Act and Communicable Diseases Regulations.[2] In Alberta, there are six sexually transmitted infections that are reported to the provincial health officer and they include: 1) gonorrhea 2) chlamydia, 3) infectious and non-infectious syphilis, 4) nongonococcal urethritis/mucopurulent cervicitis (NGU/MPC), 5) chancroid and 6) lymphogranuloma venereum.* Alberta, along with the other provinces and territories forwards provincial figures specific to chlamydia, gonorrhea, and infectious syphilis to the Centre for Infectious Disease Prevention and Control (CIDPC) at Health Canada. This allows surveillance data to be available at the national as well as provincial and territorial levels, and is helpful to understand trends of STI in Canada. National surveillance data reveals

* Although infection with human immunodeficiency virus (HIV) may occur through sexual contact, surveillance for these infectious are reported in a separate report (Alberta Blood-Borne Pathogens Surveillance Report, 2003).

that STI account for close to half of all the commonly reported infections and diseases in Canada.[3] This is also the case for Alberta and over the last few years the proportion of notifiable infections/diseases that are attributed to STI has risen to slightly over fifty percent. (Figure 1)

**Figure 1.1**: Incidence and Proportion of Reported STI* and Other Notifiable Diseases** in Alberta, Canada

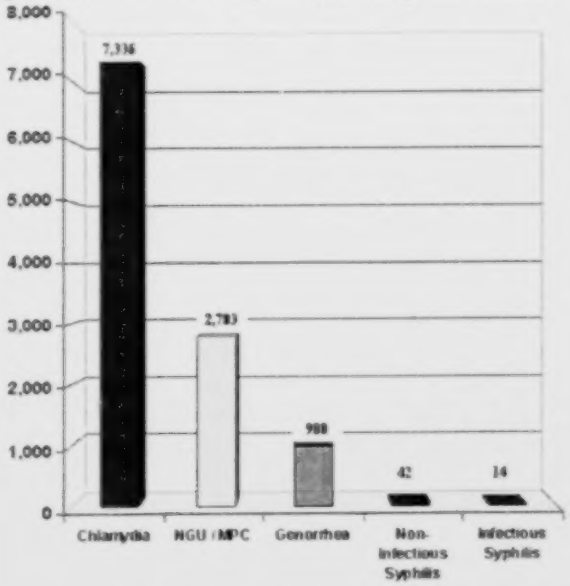



| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Other ND | 17,584 | 14,352 | 15,445 | 11,898 | 10,870 |
| STI | 9,504 | 8,702 | 9,225 | 9,827 | 11,172 |

*Includes gonorrhea, chlamydia, syphilis, NGU/MPC
** Includes all notifiable diseases reported in Alberta
Source: Alberta Health and Wellness

In Alberta during 2002, Chlamydia was the most frequently reported STI in Alberta. This was followed by reported NGU/MPC infections, gonorrhea, non-infectious syphilis and infectious syphilis. Figure 1.2 shows the numbers of these infections as reported in 2002.

**Figure 2.1.1**: Numbers of Reported STI During 2002, Alberta




Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*

## 1.2 Methods

*Data Sources*

Surveillance data can be invaluable in understanding patterns of infection and in identifying trends. This information is necessary to plan and revise programs to be most relevant to the local epidemiology. Sources of data for the purposes of this report include:

- **STD Database**

The Disease Control and Prevention Branch of Alberta Health and Wellness receives STI case information from physician notification forms, laboratory reports and STD clinics. Alberta Health and Wellness maintains this information in a "STD (sexually transmitted disease) Database" used for case management and surveillance purposes. Demographic information such as birth date, gender, ethnicity, health region of treating agency, and health region of residence are included.*

- **Alberta Stakeholder Registry**

The stakeholder registry provides population data according to those registered for the provincial health care insurance plan. Data elements include age, gender, and health region. This stakeholder data provides the denominator figure necessary for deriving case rates.

- **Hospital Morbidity Database**

The Canadian Institute for Health Information (CIHI) is responsible for a number of health services databases. One of these is the Hospital Morbidity Database (HMDB). The source of information for the HMDB is the Discharge Abstract Database (DAD) that includes information on all inpatient hospital discharges according to diagnosis from hospitals in Alberta, as well as from other participating hospitals in Canada.[4]

- **Health Canada Surveillance Data**

Health Canada provides provincial and national surveillance data in reports and tables available on the Internet through the Health Canada website <http://www.hc-sc.gc.ca>. National STD data for the period of 1998 to 2000 published in 2001 by Sexual Health and Sexually Transmitted Infections, Centre for Infectious Disease Prevention and Control, Health Canada was provided from <http://www.hc-sc.gc.ca/pphb-dgspsp/std-mts/stddata1201/index.html>.[5] National STD data for the period of 2001 to 2002, as compiled by the Sexual Health and Sexually Transmitted Infections Section, Centre for Infectious Disease Prevention and Control, Health Canada was provided from a table at <http://www.hc-sc.gc.ca/pphb-dgspsp/std-mts/stdcases-casmts/index.html>.[6]

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* Figures included in this report, reflect data reported and entered in the STD database as of June 2003.

- **Laboratory**

Cases of gonorrhea, chlamydia and syphilis are verified through laboratory findings. All laboratories in the province are required, as specified in the Public Health Act, to send positive gonorrhea, chlamydia and syphilis results to the requesting health provider with copies to Alberta Health and Wellness STD Services.[7]

***Calculation of Rates***

Mid-year population figures for 1998, 1999, 2000, 2001 and 2002 from the Alberta Stakeholder Registry provided the denominator figures for calculating the incidence rates for the notifiable sexually transmitted infections. This registry provides population figures for the province as a whole, as well as for each of seventeen health regions. It also includes population figures according to age and gender which allows the calculation and comparison of rates and trends between age and gender groups.

***Limitations***

The STD database contains only cases which have been diagnosed.

The number of cases of STI that are reported provides the numerator used in calculating rates of infection per 100,000 persons. With respect to this numerator figure, it is important to note that it represents the number of "cases" of sexually transmitted infection that are reported, and not the number of "individuals" who are infected. For instance, it is possible for a person to be included in the numerator figure more than once, if they have more than one occurrence of infection during the specified time period.

During 1998 to 2003 there were adjustments to some health regions' boundaries. However, for the purposes of this report, the health region boundaries in place during 2002 were applied to each of the four preceding years.

The ethnicity distribution presented in this report reflects ethnicity as recorded on the STD notification form and may not reflect the true ethnicity of an individual due to misclassifications. In addition, data on this variable is missing for between twenty and twenty-five percent of cases.

## 1.3 Outbreaks

During 1998 to 2002 there were outbreaks in the province involving both gonorrhea and syphilis infections. These outbreaks were identified when surveillance indicated the numbers of reported infections were nearing and passing outbreak thresholds. The nature of these outbreaks, and the response to them, are discussed in sections 3.7 (gonorrhea) and 4.8 (syphilis).

# 2 Chlamydia

**Causative Organism and Transmission**[8]

Chlamydia is caused by a bacterium called *Chlamydia trachomatis*. Transmission occurs through direct sexual contact with an infected individual. Chlamydia infection may also be transmitted from the genital tract of an infected mother to the infant during the birthing process, resulting in lung infections or serious eye infections in the newborn.

**Symptoms**

Symptoms of chlamydia usually appear within two to six weeks following sexual contact with an infected person, but may take longer. In males, symptoms may include discharge from the penis, urethral irritation and burning with urination. In females, there may be vaginal discharge, abdominal or pelvic pain, burning on urination and abnormal vaginal bleeding. Not everyone with chlamydia infection will experience symptoms. In fact, most people are asymptomatic and may go undetected and untreated. Females, in particular, are less likely to have symptoms and are at greater risk of complications from untreated chlamydia infection. In addition to untreated individuals remaining infectious and continuing to transmit chlamydia to sexual partners and newborns, they may also experience serious complications. For instance, females are at risk for developing pelvic inflammatory disease (PID), which may cause infertility, chronic pelvic pain, and ectopic pregnancy; and, untreated males may develop infection involving the testicles.

**Treatment**

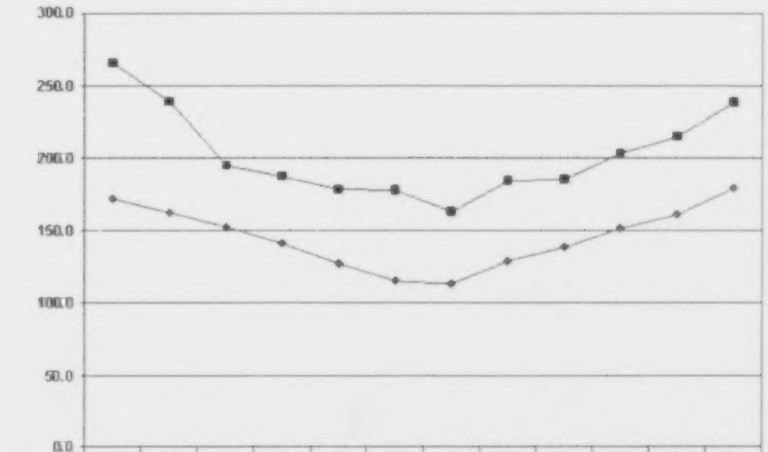
Once diagnosed, chlamydia is treatable and can be cured with appropriate antibiotics. Successful treatment, along with partner notification and follow-up will stop the spread of chlamydia. If treatment is initiated early enough, it will help prevent long-term consequences such as PID and infertility. Owing to the possibility of asymptomatic infection and missed diagnosis in women, all newborns have their eyes treated prophylactically with antibiotic ointment.

## 2.1 National

Canada's national goal for chlamydia infection is to reach a rate of 50 per 100,000 by the year 2010. However, after declining to a low of 112.7 per 100,000 in 1997[9], the Canadian national rate of chlamydia infection has been gradually rising and in 2002 reached a high of 179.0 per 100,000.[10] Alberta's rates have consistently been higher than the Canadian rate and similarly declined to a low of 162.9 per 100,000 in 1997 and then rose to 238.2 per 100,000 in 2002. (Figure 2.1.1) Chlamydia is the most commonly reported communicable disease for each province in Canada, including Alberta, making it the most commonly reported communicable disease in the country.[11]

All the provinces except three of the Maritime Provinces (Nova Scotia, Newfoundland, and Prince Edward Island) showed an increase in the rates of chlamydia infection between 2001 and 2002. Comparing these provincial rates found Alberta to have the sixth highest rate in 2002 of 238.2 per 100,000. (Figure 2.1.2) In terms of the actual number of cases reported, Alberta ranked fourth in 2002 with 7,336 chlamydia cases being reported. (Figure 2.1.3)

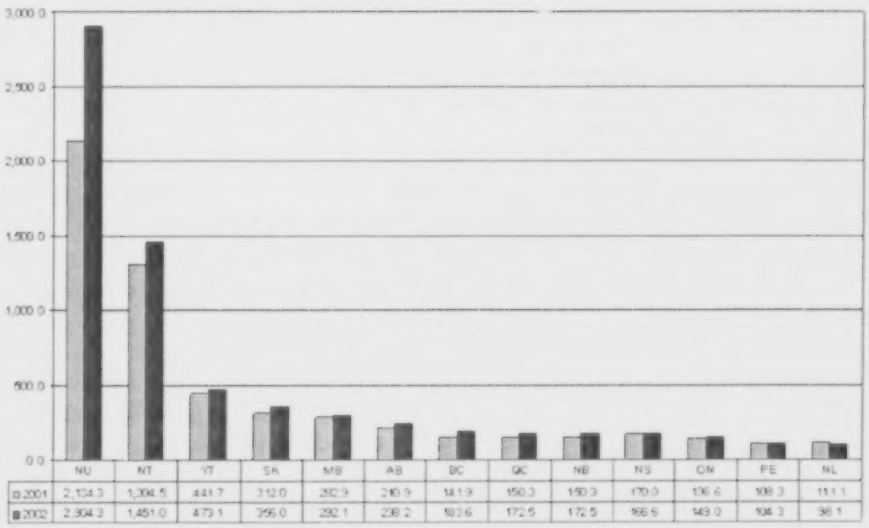
**Figure 2.1.1:** Rates per 100,000 of Reported Chlamydia Infection for Canada and Alberta by Year, 1991-2002




| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Canada | 171.7 | 162.4 | 152.1 | 141.0 | 128.8 | 114.8 | 112.7 | 128.8 | 128.2 | 151.1 | 160.5 | 179.0 |
| Alberta | 266.0 | 238.7 | 194.5 | 187.2 | 178.3 | 177.7 | 162.9 | 184.0 | 185.2 | 203.0 | 214.5 | 239.2 |

Source: Division of Sexual Health Promotion and STD Prevention and Control, Centre for Infection Disease Prevention and Control, Health Canada, 2003; Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003

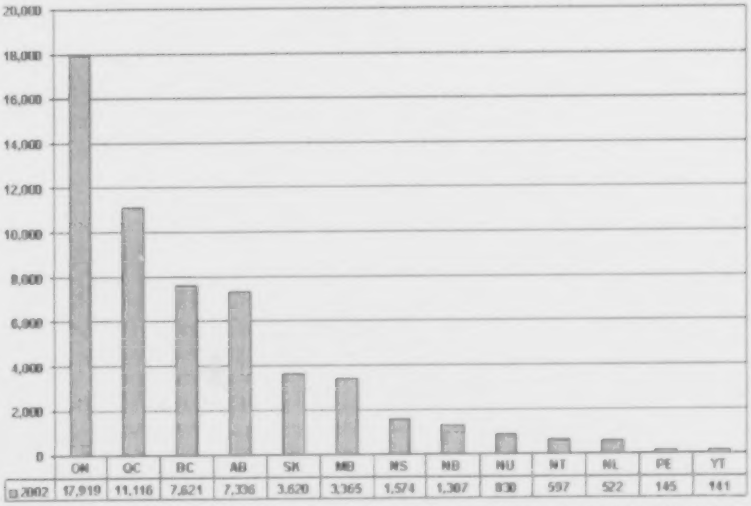
**Figure 2.1.2:** Incidence Rates per 100,000 of Reported Genital Chlamydia by Province, Calendar Years 2001 and 2002




| | NU | NT | YT | SK | MB | AB | BC | QC | NB | NS | ON | PE | NL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2001 | 2,134.3 | 1,304.5 | 441.7 | 312.0 | 262.3 | 210.9 | 141.9 | 150.3 | 150.3 | 170.0 | 136.6 | 108.3 | 111.1 |
| 2002 | 2,304.3 | 1,451.0 | 473.1 | 356.0 | 292.1 | 238.2 | 161.6 | 172.5 | 172.5 | 166.6 | 143.0 | 104.3 | 98.1 |

Source: Health Canada, Population and Public Health Branch, "Reported cases and rates of notifiable STI from January 1 to December 31, 2002 and January 1 to December 31, 2001," 08 August 2003, 20 September 2003, <http://www.hc-sc.gc.ca/pphb-dgspsp/std-mts/stdcases-cassts/index.html>; Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

**Figure 2.1.3:** Number of Reported Genital Chlamydia Cases Reported by Province for Calendar Year 2002



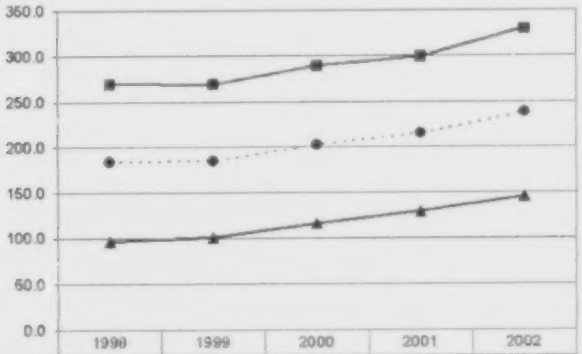

| | ON | QC | BC | AB | SK | MB | NS | NB | NU | NT | NL | PE | YT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2002 | 17,919 | 11,116 | 7,621 | 7,336 | 3,620 | 3,365 | 1,574 | 1,307 | 830 | 597 | 522 | 145 | 141 |

Source: Health Canada, Population and Public Health Branch. "Reported cases and rates of notifiable STI from January 1 to December 31, 2002 and January 1 to December 31, 2001." 08 August 2003. 20 September 2003. <http://www.hc-sc.gc.ca/pphb-dgspsp/std-mts/stdcases-casmts/index.html>.

## 2.2 Age and Gender

Over the past five years the rate of reported chlamydia infection has been rising in Alberta. The provincial rate has risen from 184.0 per 100,000 in 1998 to 238.2 per 100,000 in 2002. Throughout this period, and since 1987 when chlamydia became reportable, females have consistently shown higher rates than males. Rising infection rates have been evident for both males and females and reached 145.5 per 100,000 for males and 330.7 for females in 2002. (Figure 2.2.1)

**Figure 2.2.1:** Incidence Rates per 100,000 of Reported Chlamydia for the Province and According to Gender, Alberta, 1998-2002




| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Province | 184.0 | 185.2 | 203.0 | 214.6 | 238.2 |
| Female | 270.5 | 269.3 | 289.5 | 299.0 | 330.7 |
| Male | 97.1 | 100.9 | 116.3 | 129.9 | 145.5 |

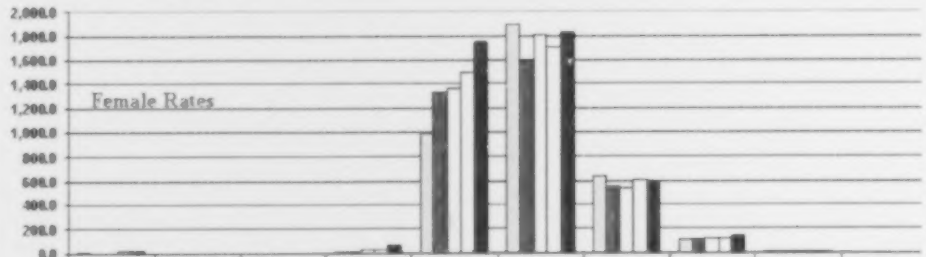
Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

The incidence rate of chlamydia varies

between age groups for both males and females suggesting that certain age groups are at higher risk of infection. Figures 2.2.2 and 2.2.3 show that since 1998, the 20 – 24 year old age group has had the highest infection rates for both genders. For females, the 15 – 19 year old age group followed with the next highest rate, while for males, it was the older 25 – 29 year old group with the next highest rate. Appendix B shows the *number* of reported chlamydia infections by gender and age group. Appendix C shows the *proportion* of those infected by age group during 1998 to 2002.

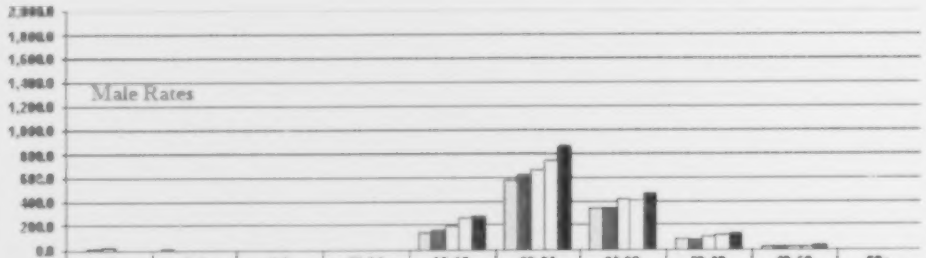
The infection rate for 15 – 19 year old females has almost doubled since 1998, from a

**Figure 2.2.2:** Incidence Rates per 100,000 of Reported Chlamydia by Age Group for Females, Alberta, 1998-2002




| | <1 | 1-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-39 | 40-59 | 60+ |
|---|---|---|---|---|---|---|---|---|---|---|
| 1998 | 5.4 | 3.9 | 0.9 | 11.2 | 987.2 | 1,038.8 | 630.5 | 110.3 | 10.6 | 0.0 |
| 1999 | 0.0 | 1.3 | 0.0 | 12.9 | 1,333.7 | 1,582.7 | 554.2 | 106.2 | 14.3 | 0.5 |
| 2000 | 0.0 | 0.0 | 0.0 | 27.3 | 1,362.0 | 1,809.7 | 541.4 | 116.2 | 15.2 | 1.4 |
| 2001 | 22.1 | 1.3 | 0.0 | 38.1 | 1,585.3 | 1,700.2 | 480.9 | 119.2 | 14.8 | 0.0 |
| 2002 | 21.8 | 0.0 | 0.0 | 67.0 | 1,746.9 | 1,829.5 | 500.7 | 133.0 | 13.0 | 0.0 |

**Figure 2.2.3:** Incidence Rates per 100,000 of Reported Chlamydia by Age Group for Males, Alberta, 1998-2002




| | <1 | 1-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-39 | 40-59 | 60+ |
|---|---|---|---|---|---|---|---|---|---|---|
| 1998 | 0.0 | 7.3 | 1.0 | 0.0 | 134.5 | 576.7 | 348.3 | 99.2 | 21.1 | 1.7 |
| 1999 | 10.1 | 0.0 | 0.9 | 1.8 | 165.4 | 618.4 | 339.1 | 98.2 | 21.1 | 3.9 |
| 2000 | 20.0 | 0.0 | 0.0 | 0.0 | 194.6 | 644.2 | 415.8 | 103.1 | 23.9 | 2.7 |
| 2001 | 0.0 | 0.0 | 0.0 | 1.7 | 268.4 | 748.6 | 491.0 | 122.8 | 23.2 | 3.7 |
| 2002 | 5.3 | 0.0 | 0.0 | 2.8 | 282.8 | 862.4 | 464.7 | 124.7 | 27.1 | 2.5 |

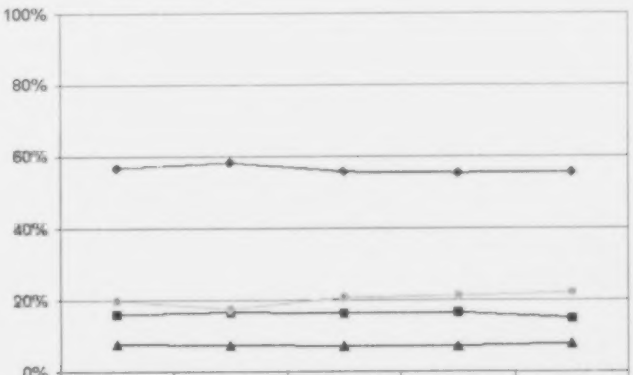
Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2001)*, June 2003

rate of 987.2 per 100,000 to 1,746.9 per 100,000 in 2002. However, rates associated with the other female age groups remained fairly stable during the same time period. Although infection rates were lower in all age groups for males than for females, rates for males tended to increase between 1998 and 2002. The increase for males was also most notable in the 15 – 19 year old age group, with a rate of 282.8 per 100,000 in 2002 which was slightly more than double the 1998 rate. Rates for males in the 20 – 24, and the 25 – 29 year age groups also increased 1.5 times and 1.3 times respectively, from the 1998 rates.

## 2.3 Ethnicity

During 1998 to 2002, the proportions of those infected according to affiliation with a particular ethnic group have remained fairly constant. For each of the five years, those identifying themselves as Caucasian comprised over fifty-five percent of infections. The second largest affected group was those whose ethnic identification was not known, followed by Aboriginal and "other" ethnic groups. Aboriginals, who represent approximately five percent of Alberta's population according to the 2001 Canadian Census*, were disproportionately represented during this time period, with 14.9% of reported chlamydia infectious in 2002 being in those who identified themselves as Aboriginal. (Figure 2.3.1)

**Figure 2.3.1:** Proportion of Reported Chlamydia Infection According to Self-Reported Ethnic Group, by Year – Alberta, 1998-2002




| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Caucasian | 56.7% | 58.3% | 55.8% | 55.3% | 55.6% |
| Aboriginal* | 15.9% | 16.7% | 16.4% | 16.5% | 14.9% |
| Other** | 7.6% | 7.5% | 7.1% | 7.1% | 7.8% |
| Unknown | 19.8% | 17.6% | 20.7% | 21.1% | 22.0% |

* "Aboriginal" includes: First Nations, Metis, and Inuit
** "Other" includes individuals identifying themselves as "Black", "Oriental", "Other Asiatic" or "Other"
Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003

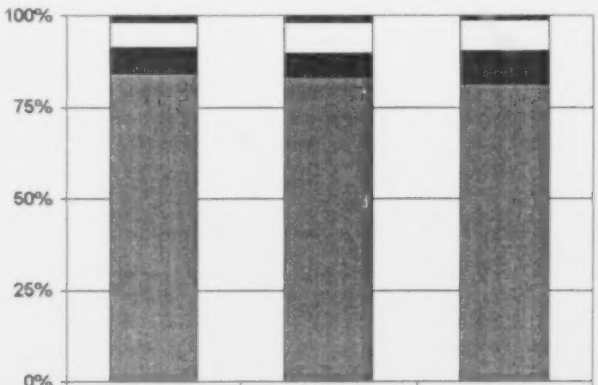
* Statistics Canada. Population by Aboriginal Group, 2001 Census, Canada, provinces, and territories: Aboriginal Identity (8), Age Groups (11B), Sex (3) and Area of Residence (7) for Population, for Canada, Provinces and Territories, 2001 Census - 20% Sample Data. 03 Jul 2003. 03 Feb 2004. <http://www.statcan.ca/english/Pgdb/popula.htm#pop>.

## 2.4 Geographic Distribution

*Reporting Agency*

In 2002, physicians reported 81.6% of chlamydia cases, with the STD clinics in Calgary, Edmonton, and Ft. McMurray reporting 8.9%, 8.3% and 1.3% respectively. This suggests that a large number of individual physicians play a major role in diagnosing, treating and reporting chlamydia infection. Figure 2.4.1 shows the proportion of cases reported by physicians and clinics during 2000 to 2002.

**Figure 2.4.1:** Proportion of Reported Chlamydia Infection by Reporting Agency, 2000-2001



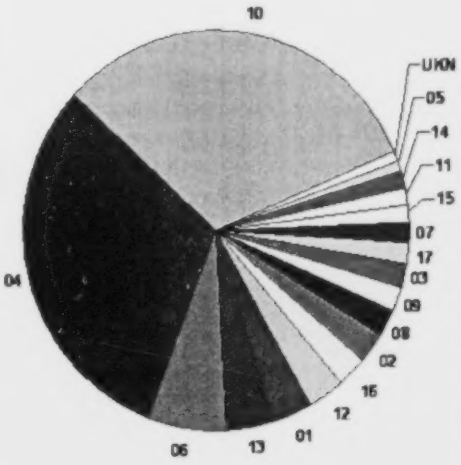

| | 2000 | 2001 | 2002 |
|---|---|---|---|
| Fort McMurray Clinic | 1.6% | 1.6% | 1.3% |
| Edmonton Clinic | 7.1% | 8.5% | 8.3% |
| Calgary Clinic | 6.9% | 6.6% | 8.9% |
| Physician | 84.4% | 83.3% | 81.6% |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003

### *Cases According to Health Region*

The Calgary Regional Health and Capital Health Regional Authorities each contributed close to 1/3 of all reported cases of chlamydia in 2002, with the remainder of cases being reported from the other fifteen provincial health regions. Figure 2.4.2 shows the contribution toward the total number of reported chlamydia infections in the province by each region. Appendix D shows the numbers of reported chlamydia infections according to health region for 1998 to 2002.

**Figure 2.4.2:** Proportion and Number of Reported Chlamydia Infections by Health Region in 2002



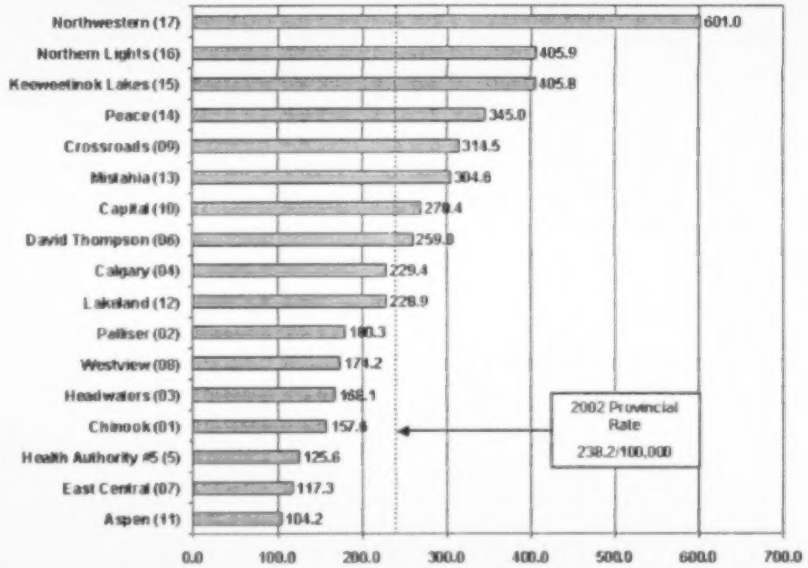

| Health Region | | # of Cases | % of Cases |
|---|---|---|---|
| | Unknown | 67 | 0.9 |
| 05 | Health Auth. #5 | 71 | 1.0 |
| 14 | Peace | 88 | 1.2 |
| 11 | Aspen | 100 | 1.4 |
| 15 | Keeweetinok Lakes | 109 | 1.5 |
| 07 | East Central | 121 | 1.6 |
| 17 | Northwestern | 126 | 1.7 |
| 03 | Headwaters | 134 | 1.8 |
| 09 | Crossroads | 154 | 2.1 |
| 08 | Westview | 167 | 2.3 |
| 02 | Palliser | 174 | 2.4 |
| 16 | Northern Lights | 187 | 2.5 |
| 12 | Lakeland | 228 | 3.1 |
| 01 | Chinook | 239 | 3.3 |
| 13 | Mistahia | 281 | 3.8 |
| 06 | David Thompson | 504 | 6.9 |
| 04 | Calgary | 2,278 | 31.0 |
| 10 | Capital | 2,326 | 31.6 |
| | Total | 7,352 | 100.0 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD DataBase (1996-2002)*, June 2003.

### *Rates According to Health Region*

The overall crude rate of reported chlamydia infection for Alberta was 238.2 per 100,000 in 2002. Rates varied considerably between regions and although Capital and Calgary regions contributed the greatest numbers of cases in the province, the highest rates of reported chlamydia were found in the northern part of the province; particularly in the Northern Lights, Keeweetinok Lakes, and Peace Regions, with rates per 100,000 of 601.0, 405.9 and 405.8 respectively. The three regions with the lowest rates per 100,000 were Aspen at 104.2, East Central at 117.3 and Health Authority #5 at 125.6. Figure 2.4.3 depicts the rate of chlamydia infection for each region. Table 2.4.1 gives the rates, rounded to the nearest tenth, of chlamydia over five years for each of the seventeen health regions.

**Figure 2.4.3:** Rate per 100,000 Population of Reported Chlamydia Infection by Health Region, Alberta, 2002




Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

**Figure 2.4.1:** Rates of Reported Chlamydia Infection per 100,000 by Health Region, 1998-2002, Ranked from Lowest to Highest Rate in 2002

| Health Region | | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|
| 11 | Aspen | 80.1 | 80.0 | 105.1 | 89.6 | 104.1 |
| 07 | East Central | 91.9 | 73.1 | 79.9 | 116.4 | 117.3 |
| 05 | Health Authority #5 | 81.6 | 71.7 | 92.5 | 93.1 | 125.6 |
| 01 | Chinook | 153.3 | 169.9 | 163.0 | 160.2 | 157.6 |
| 03 | Headwaters | 194.8 | 151.4 | 136.8 | 170.4 | 168.1 |
| 08 | Westview | 110.9 | 97.4 | 104.0 | 145.4 | 174.2 |
| 02 | Palliser | 165.3 | 171.7 | 173.7 | 176.7 | 180.3 |
| 12 | Lakeland | 173.7 | 151.5 | 167.9 | 171.1 | 228.9 |
| 04 | Calgary | 179.4 | 175.2 | 192.9 | 195.8 | 229.4 |
| 06 | David Thompson | 239.0 | 226.4 | 217.7 | 202.9 | 259.8 |
| 10 | Capital | 185.4 | 209.7 | 221.6 | 247.0 | 270.4 |
| 13 | Mistahia | 234.8 | 220.1 | 374.9 | 370.2 | 304.6 |
| 09 | Crossroads | 285.4 | 268.0 | 279.7 | 240.1 | 314.5 |
| 14 | Peace | 220.4 | 273.7 | 422.6 | 391.0 | 345.0 |
| 15 | Keeweetinok Lakes | 428.5 | 306.5 | 379.5 | 448.8 | 405.8 |
| 16 | Northern Lights | 311.5 | 298.2 | 366.7 | 401.8 | 405.9 |
| 17 | Northwestern | 427.2 | 513.4 | 517.9 | 515.2 | 601.0 |
| Annual Provincial Rate | | 184.0 | 185.2 | 203.0 | 214.5 | 238.2 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

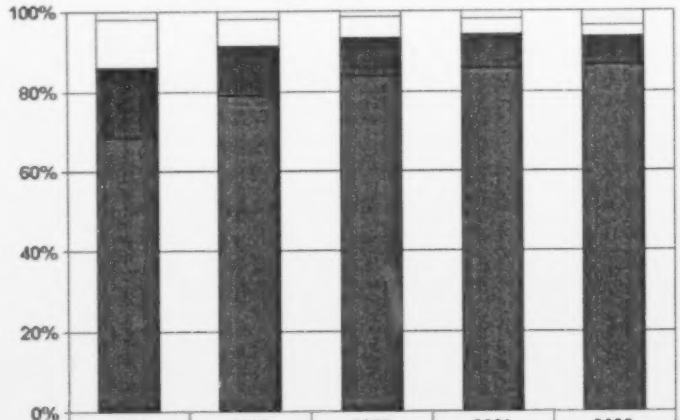
## 2.5 Treatment

In 1998, Alberta Health and Wellness released *Treatment Guidelines for Sexually Transmitted Diseases* describing the recommended antibiotic regimens for treating genital chlamydia infection in adolescents, adults and pregnant women. In general, azithromycin is the recommended antibiotic for treating adults and adolescents with genital chlamydia infection, with doxycycline as a possible alternative antibiotic choice. For pregnant women, recommended treatment is with either azithromycin or erythromycin.

The *Treatment Guidelines* include important considerations for treating chlamydia infections and are an important resource in delivering effective treatment. In 2003, revisions to the 1998 *Guidelines* were completed and Alberta Health and Wellness published the "*Alberta Treatment Guidelines: Sexually Transmitted Infections in Adolescents and Adults*". Copies of this more recent publication are available from the Data Fivepark Warehouse by faxing (403) 272-7774.

The use of azithromycin, the drug of choice in the treatment of chlamydia, increased from 68.2% in 1998 to 86.3% in 2002. Overall, in 2002, 96.2% of treatment for chlamydia infection involved one of the three drugs (azithromycin, doxycycline, erythromycin) recommended in the *Treatment Guidelines (1998)*. (Figure 2.5.1)

**Figure 2.5.1:** Proportion of Reported Chlamydia Infections Treated with Azithromycin, Doxycycline, Erythromycin and Other Antibiotics




| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Other Drugs | 2.1% | 2.0% | 1.5% | 2.0% | 3.8% |
| Erythromycin | 12.0% | 6.8% | 5.5% | 4.0% | 2.7% |
| Doxycycline | 17.7% | 12.2% | 9.3% | 8.2% | 7.2% |
| Azithromycin | 68.2% | 78.9% | 83.6% | 85.8% | 86.3% |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## 2.6 Summary

- Chlamydia is the most common notifiable STI in Alberta with the majority of the infections being reported through a physician's office.
- Under diagnosis of chlamydia infection is possible as fifty to seventy-five percent of those infected will be asymptomatic. This may result in an underestimate of the true prevalence of chlamydia infection in Alberta.
- Geographic variations in infection rates exist within the province, and in 2002 the highest rates occurred in some of the more northern regions of the province.
- Chlamydia remains more commonly reported in females than males and, in general, females who are infected tend to be a younger group than infected males.
- Infection rates have doubled in the 15 – 19 year age group for both males and females, and rates among males age 20 – 24, and 25 – 29 have been increasing since 1998.
- The proportion of chlamydia infection according to ethnicity has remained constant with Caucasians being the group most often affected. However, Aboriginals, who comprise only five percent of Alberta's population, are disproportionately affected by chlamydia infection.
- Almost all cases of chlamydia are treated according to treatment guidelines recommended by Alberta Health and Wellness.

# 3 Gonorrhea

**Causative Organism and Transmission**[12]

Gonorrhea is caused by a bacterium called *Neisseria gonorrhoeae*. Transmission occurs through direct sexual contact with an infected individual. Gonorrhea may also be transmitted from the genital tract of an infected mother to the infant during the birthing process, resulting in serious eye infections, scalp abscesses or disseminated gonococcal infection.

**Symptoms and Complications**

Symptoms of gonorrhea usually appear within two to seven days following sexual contact with an infected person. In males, symptoms may include purulent discharge from the penis and painful urination. In females, there may be purulent vaginal discharge, abdominal or pelvic pain, burning on urination, and abnormal vaginal bleeding. Depending on sexual practices, it is also possible for rectal and pharyngeal gonococcal infections to occur. Not everyone infected with gonorrhea will experience symptoms. Males are more likely to have symptoms, while the majority of females infected with gonorrhea are asymptomatic. With asymptomatic infections, timely diagnosis and treatment are less likely to occur. This increases the risk of continued spread of gonorrhea to sexual partners, transmission of infection to newborns, and development of serious complications. Complications of gonorrhea disproportionately affect females and include the possibility of PID, which may cause infertility, chronic pelvic pain, and ectopic pregnancy. In both males and females, untreated gonorrhea may extend beyond genital sites and disseminate throughout the body.

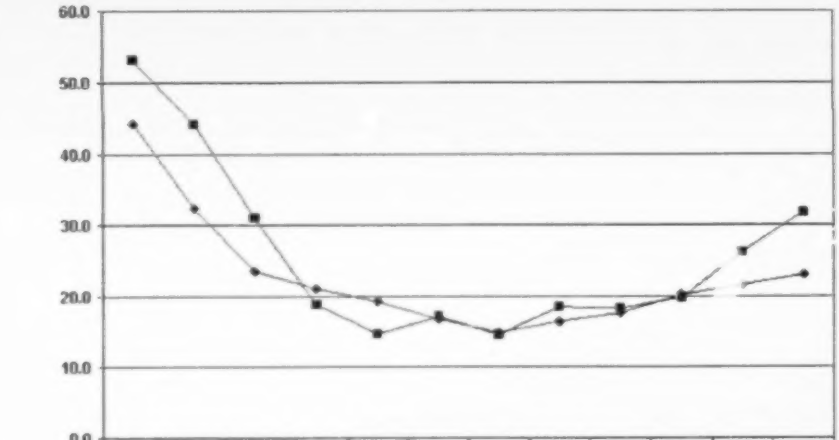
**Treatment**

Once diagnosed, gonorrhea is treatable and can be cured with appropriate antibiotics. Antimicrobial resistance to gonorrhea is monitored in Alberta and to the end of 2001 the organism remained sensitive to the recommended first line agents. Successful treatment will stop the spread of gonorrhea and, if treatment is initiated early enough, will help prevent long-term consequences such as PID and infertility. Owing to the possibility of asymptomatic infection and missed diagnosis in women, all newborns have their eyes treated prophylactically with antibiotic ointment.

## 3.1 National

Gonorrhea is the second most common notifiable STI across Canada. Canada's goal for gonorrhea infection is "elimination" by the year 2010. Incidence rates for Canada and for Alberta declined to a low of 14.9 and 14.6 per 100,000 in 1997, but since 1997 rates have been rising.[13] In both 2001 and 2002, rates of gonorrhea in Alberta have been higher than the national rates. This is largely due to regional outbreaks of gonorrhea in the province as described in section 3.7. In 2002, the rate of gonorrhea infection in Alberta was 31.8 per 100,000 while for Canada, as a whole, the rate was 23.0 per 100,000. (Figure 3.1.1)

**Figure 3.1.1:** Rates per 100,000 of Reported Gonorrhea Infection for Canada and Alberta by Year, 1991-2002

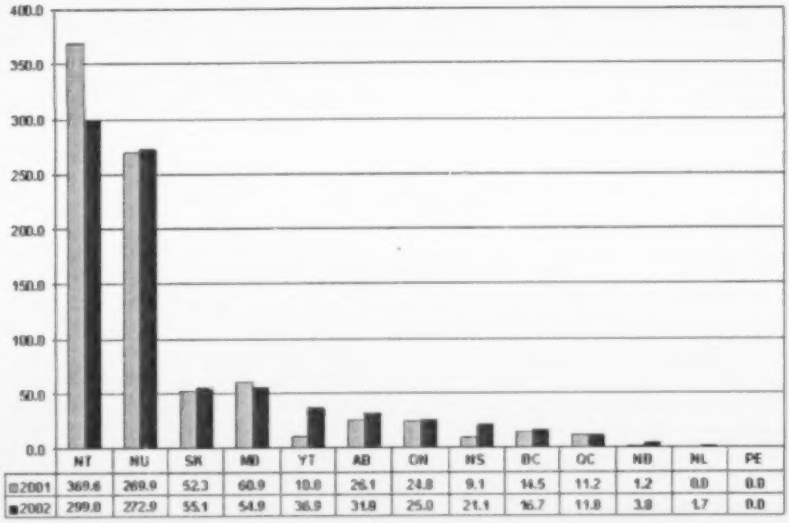



| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Canada | 44.3 | 32.4 | 23.6 | 21.1 | 19.3 | 16.8 | 14.9 | 16.4 | 17.6 | 20.2 | 21.6 | 23.0 |
| Alberta | 53.2 | 44.2 | 31.0 | 18.8 | 14.8 | 17.2 | 14.6 | 18.5 | 18.3 | 19.8 | 26.2 | 31.8 |

Source: Division of Sexual Health Promotion and STD Prevention and Control, Centre for Infection Disease Prevention and Control, Health Canada, 2003; Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

Prince Edward Island was the only province that did not report any cases of gonorrhea during the years 2001 and 2002. All the other provinces, except Manitoba and the Northwest Territories, indicated slightly higher gonorrhea case rates in 2002. Comparison of these provincial rates found Alberta to rank sixth highest in 2002 with a rate of 31.8 per 100,000; and according to the number of cases, Alberta ranked second with 980 reported cases of gonorrhea. (Figures 3.1.2 and 3.1.3)

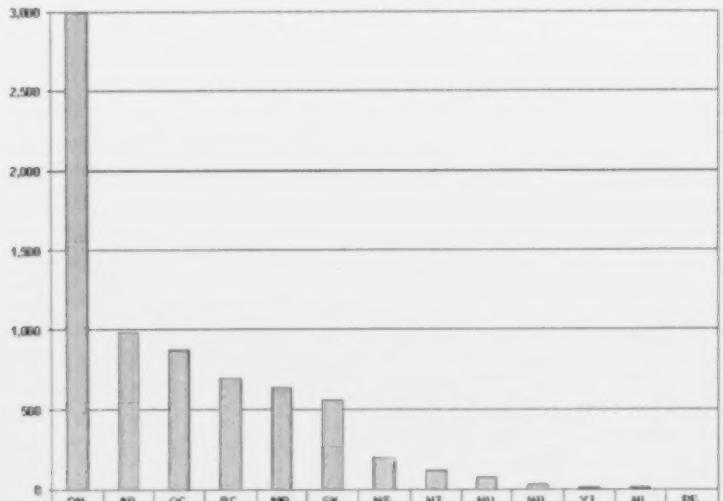
**Figure 3.1.2:** Incidence Rates per 100,000 of Reported Gonorrhea Infection by Province for Calendar Years 2001 and 2002




| | NT | NU | SK | MB | YT | AB | ON | NS | BC | QC | NB | NL | PE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2001 | 369.6 | 269.9 | 52.3 | 60.9 | 10.8 | 26.1 | 24.8 | 9.1 | 14.5 | 11.2 | 1.2 | 0.0 | 0.0 |
| 2002 | 299.0 | 272.9 | 55.1 | 54.9 | 36.9 | 31.8 | 25.0 | 21.1 | 16.7 | 11.8 | 3.8 | 1.7 | 0.0 |

Source: Health Canada. Population and Public Health Branch. "Reported cases and rates of notifiable STI from January 1 to December 31, 2002 and January 1 to December 31, 2001." 08 August 2003 - 20 September 2003. <http://www.hc-sc.gc.ca/pphb-dgspsp/std-mts/stdcases-casmts/index.html>; Disease Control and Prevention Branch, Alberta Health and Wellness. *STD Database (1996-2002)*, June 2003.

**Figure 3.1.3:** Number of Reported Gonorrhea Infections Reported by Province for Calendar Year 2002




| | ON | AB | QC | BC | MB | SK | NS | NT | NU | NB | YT | NL | PE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2002 | 3,000 | 910 | 870 | 695 | 633 | 560 | 199 | 123 | 78 | 29 | 11 | 9 | 0 |

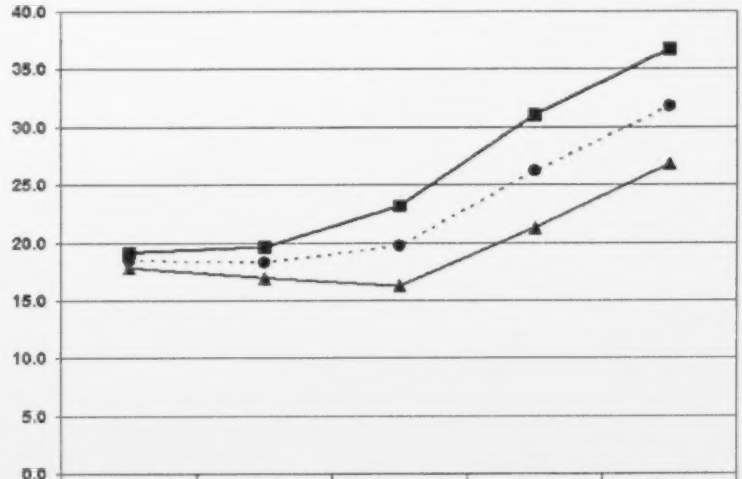
Source: Health Canada. Population and Public Health Branch. "Reported cases and rates of notifiable STI from January 1 to December 31, 2002 and January 1 to December 31, 2001." 08 August 2003 - 20 September 2003. <http://www.hc-sc.gc.ca/pphb-dgspsp/std-mts/stdcases-casmts/index.html>.

## 3.2 Age and Gender

Over the past five years the rate of reported gonorrhea infection has been rising in Alberta. The provincial incidence rate has risen from 18.5 per 100,000 in 1998 to 31.8 per 100,000 in 2002. Throughout this five-year period, males have consistently shown higher rates of gonorrhea than females; in addition, the rate increase has been proportionately greater in males than females.

Rising infection rates have been evident for males since 1998 and for females since 2000. These rates reached 36.8 per 100,000 for males and 26.8 per 100,000 for females in 2002. (Figure 3.2.1)

**Figure 3.2.1:** Incidence Rates per 100,000 of Reported Gonorrhea Infection for the Province and According to Gender, Alberta, 1998-2002




| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Province | 18.5 | 18.3 | 19.8 | 26.2 | 31.8 |
| Male | 19.2 | 19.7 | 23.2 | 31.1 | 36.8 |
| Female | 17.8 | 17.0 | 16.3 | 21.3 | 26.8 |

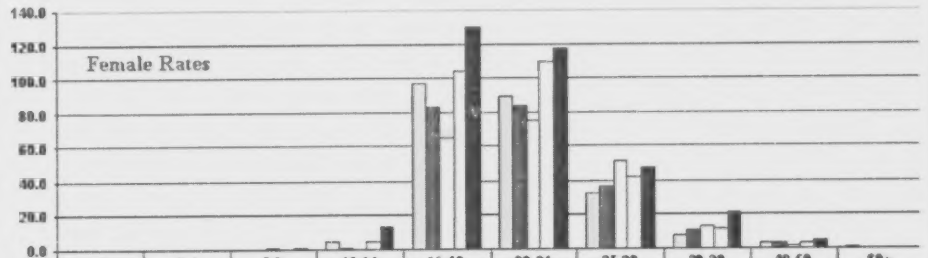
Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

The incidence rate of gonorrhea varies between age groups for both males and females suggesting that certain age groups are at higher risk of infection. Figures 3.2.2 and 3.2.3 show that in 2002, the 15 – 19 year old age group had the highest rate for females and the 20 – 24 year old age group had the highest rate for males. For females, the second highest rates were in the 20 – 24 year old age group. For males the second highest rates were in the older 25 – 29 year old group.

Over the past five years, the infection rate per 100,000 for 15 – 19 year old females was lowest in 2000 at 65.6. By 2002, this rate nearly doubled to a high of 130.1 per 100,000. Although the increase in rates for females was not as dramatic in the other age groups,

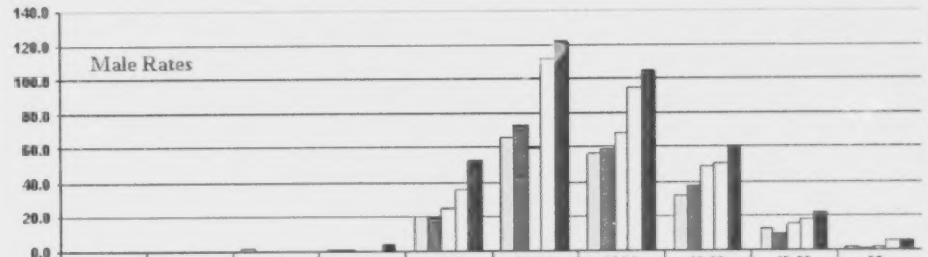
rates increased for all groups (over age nine) from 2001 to 2002. Similarly, rates for males (over age nine) increased from 2001 to 2002.* For the male age group with the highest rates (20 – 24 years) the lowest rate during 1998 to 2002, occurred in 2000 at 59.7 per 100,000. By 2002, this rate slightly more than doubled to 121.9 per 100,000. (Figures 3.2.2 and 3.2.3) Appendix E shows the *number* of reported gonorrhea infections by gender and age group. Appendix F shows the *proportion* of those infected by age group during 1998 to 2002.

**Figure 3.2.2:** Incidence Rates per 100,000 of Reported Gonorrhea by Age Group for Females, Alberta, 1998-2002




| | <1 | 1-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-39 | 40-59 | 60+ |
|---|---|---|---|---|---|---|---|---|---|---|
| 1998 | 0.0 | 0.0 | 0.0 | 4.7 | 97.0 | 89.5 | 32.7 | 7.3 | 2.8 | 0.5 |
| 1999 | 0.0 | 0.0 | 0.0 | 0.9 | 82.5 | 84.2 | 35.9 | 10.5 | 2.6 | 0.0 |
| 2000 | 0.0 | 0.0 | 1.0 | 0.0 | 65.6 | 75.3 | 51.0 | 13.1 | 1.5 | 0.0 |
| 2001 | 0.0 | 0.0 | 0.0 | 4.5 | 103.6 | 109.7 | 42.1 | 11.6 | 2.9 | 0.0 |
| 2002 | 0.0 | 0.0 | 1.0 | 12.5 | 130.1 | 117.5 | 47.4 | 21.3 | 4.4 | 0.0 |

**Figure 3.2.3:** Incidence Rates per 100,000 of Reported Gonorrhea by Age Group for Males, Alberta, 1998-2002




| | <1 | 1-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-39 | 40-59 | 60+ |
|---|---|---|---|---|---|---|---|---|---|---|
| 1998 | 0.0 | 0.0 | 1.0 | 0.9 | 20.6 | 66.4 | 56.1 | 31.7 | 11.9 | 1.7 |
| 1999 | 0.0 | 0.0 | 0.0 | 0.9 | 19.9 | 73.3 | 58.4 | 37.0 | 8.7 | 1.1 |
| 2000 | 0.0 | 0.0 | 0.0 | 0.0 | 24.7 | 59.7 | 68.4 | 40.8 | 14.8 | 1.6 |
| 2001 | 0.0 | 0.0 | 0.0 | 0.0 | 35.2 | 112.0 | 94.8 | 50.3 | 17.8 | 5.3 |
| 2002 | 0.0 | 0.0 | 0.0 | 3.4 | 53.0 | 121.9 | 104.9 | 59.2 | 21.6 | 5.6 |

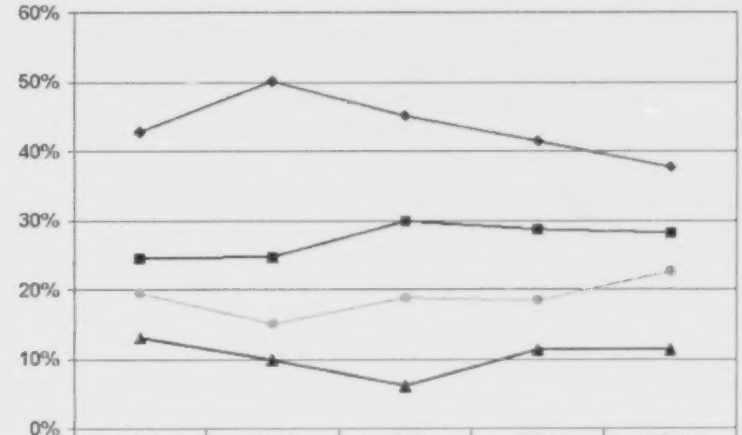
Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

* All reported cases of STI in children age 14 and younger trigger an investigation for sexual abuse by the regional health authority and the child's physician.

## 3.3 Ethnicity

The proportion of those infected with gonorrhea that identified themselves as Caucasian has decreased since 1999. With this decrease, there was a corresponding increase, although only slight, for those identified as either Aboriginal or "unknown". Aboriginals, who represent approximately five percent of Alberta's population according to the 2001 Canadian Census*, were disproportionately represented during this time period, with 28.2% of reported gonorrhea infectious in 2002 being in those who identified themselves as Aboriginal. (Figure 3.3.1)

**Figure 3.3.1:** Proportion of Gonorrhea Infection According to Self-Reported Ethnic Group by Year – Alberta, 1998-2002




| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Caucasian | 42.8% | 50.1% | 45.1% | 41.5% | 37.7% |
| Aboriginal* | 24.6% | 24.3% | 29.9% | 28.7% | 28.2% |
| Other** | 13.1% | 9.9% | 6.1% | 11.4% | 11.4% |
| Unknown | 19.5% | 15.1% | 18.9% | 18.4% | 22.6% |

* "Aboriginal" includes: First Nations, Metis, Inuit

** "Other" includes individuals identifying themselves as "Black", "Oriental", "Other Asiatic", or "Other"

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003

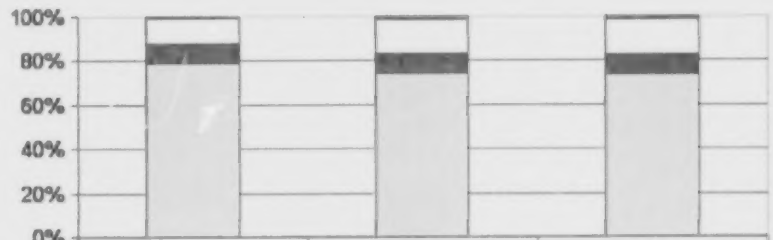
* Statistics Canada. Population by Aboriginal Group, 2001 Census, Canada, provinces, and territories: Aboriginal Identity (8), Age Groups (11B), Sex (3) and Area of Residence (7) for Population, for Canada, Provinces and Territories, 2001 Census - 20% Sample Data. 03 Jul 2003. 03 Feb 2004. <http://www.statcan.ca/english/Pgdb/popula.htm#pop>.

## 3.4 Geographic Distribution

*Reporting Agency*

In 2002, physicians reported 73.7% of gonorrhea cases, with the STD clinics in Calgary, Edmonton, and Ft. McMurray reporting 8.9%, 16.3% and 1.2% respectively. This suggests that a large number of individual physicians play a major role in diagnosing, treating and reporting gonorrhea infection. Figure 3.4.1 shows the proportion of cases reported by physicians and clinics and includes a table of the actual number of cases reported by each source.

**Figure 3.4.1:** Proportion of Reported Gonorrhea Infection by Reporting Agency, With Number of Cases Reported, 2000-2001



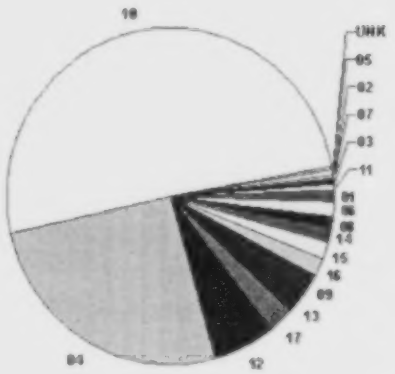

| | 2000 | 2001 | 2002 |
|---|---|---|---|
| Ft. McMurray Clinic | 3 | 10 | 10 |
| Edmonton Clinic | 67 | 123 | 160 |
| Calgary Clinic | 52 | 70 | 88 |
| Physician | 464 | 589 | 723 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1998-2002)*, June 2003.

### *Cases According to Health Region*

The Capital Health Region contributed close to half of all reported cases of gonorrhea in 2002. The Calgary Regional Health Authority reported a quarter of the cases and the rest of the cases were reported from the other fifteen provincial health regions. (Figure 3.4.2) High numbers of gonorrhea cases from regions with large populations, such as Capital and Calgary, is not surprising, however such a large difference between these urban areas

**Figure 3.4.2:** Proportion and Number of Reported Gonorrhea Infections by Health Region in 2002




| Health Region | | # of Cases | % of Cases |
|---|---|---|---|
| UNK | Unknown | 2 | 0.2 |
| 05 | Health Auth. #5 | 2 | 0.2 |
| 02 | Palliser | 3 | 0.3 |
| 07 | East Central | 4 | 0.4 |
| 03 | Headwaters | 6 | 0.6 |
| 11 | Aspen | 6 | 0.6 |
| 01 | Chinook | 11 | 1.1 |
| 06 | David Thompson | 12 | 1.2 |
| 08 | Westview | 12 | 1.2 |
| 14 | Peace | 13 | 1.3 |
| 15 | Keeweetinok | 16 | 1.6 |
| 16 | Northern Lights | 17 | 1.7 |
| 09 | Crossroads | 18 | 1.8 |
| 13 | Mistahia | 22 | 2.2 |
| 17 | Northwestern | 26 | 2.7 |
| 12 | Lakeland | 59 | 6.0 |
| 04 | Calgary | 252 | 25.7 |
| 10 | Capital | 500 | 51.0 |
| | Total | 981 | 100.0 |

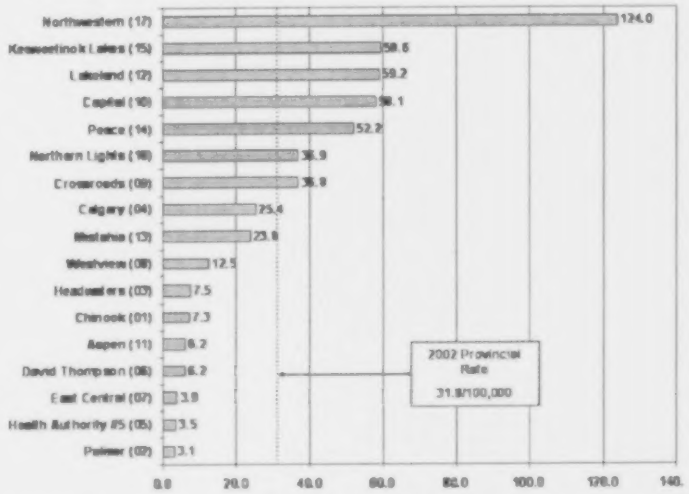
Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

is interesting and reflects the gonorrhea outbreak identified in the Capital Region during January 1998 to June 2002 (see section 3.7). Appendix G shows the numbers of reported gonorrhea infections according to health region for 1998 to 2002.

### *Rates According to Health Region*

The overall crude rate of reported gonorrhea infection in 2002 was 31.8 per 100,000. Rates varied considerably between regions and although Capital and Calgary regions contributed the greatest numbers of cases in the province, the highest rate of reported gonorrhea was found in the Northwestern Region with a rate in 2002 of 124.0 per 100,000. The next highest rates were almost half of this and were found in Keeweetinok Lakes, Lakeland and Capital Regions with rates of 59.6, 59.2 and 58.1 per 100,000 respectively. In contrast to this, three regions had rates that were less than 4 per 100,000 and these were Palliser (3.1), Health Authority #5 (3.5), and East Central (3.9). Figure 3.4.3 depicts rates of gonorrhea infection in 2002 for each region.

**Figure 3.4.3:** Rate per 100,000 Population of Reported Gonorrhea Infection by Health Region, Alberta, 2002




Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

For eleven of the seventeen regions, the rates of gonorrhea infection increased in 2002 from 2001. Decreases were noted in Palliser, Health Authority #5, David Thompson, Crossroads, and Northwestern Regions and the rate in East Central was unchanged. The most dramatic decrease was noted in the Northwestern Region, where an outbreak was identified and contained (Section 3.7). Although gonorrhea rates in this region are the highest in the province, the rate in 2002 was less than half the rate in 2000. (Table 3.4.1)

**Table 3.4.1:** Yearly Rates of Gonorrhea Infection by Health Region, 1998 to 2002, Ranked from Lowest to Highest Rate in 2002

| Health Region | | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|
| 02 | Palliser | 5.6 | 8.8 | 3.2 | 11.6 | 3.1 |
| 05 | Health Auth. #5 | 3.8 | 5.5 | 1.8 | 10.7 | 3.5 |
| 07 | East Central | 1.0 | 0.0 | 3.9 | 3.9 | 3.9 |
| 06 | David Thompson | 10.1 | 10.4 | 9.7 | 10.0 | 6.2 |
| 11 | Aspen | 4.3 | 0.0 | 6.4 | 3.2 | 6.2 |
| 01 | Chinook | 6.8 | 10.7 | 6.7 | 6.0 | 7.3 |
| 03 | Headwaters | 2.8 | 8.1 | 3.9 | 2.6 | 7.5 |
| 08 | Westview | 1.1 | 5.5 | 6.5 | 8.6 | 12.5 |
| 13 | Mistahia | 11.6 | 5.7 | 5.6 | 21.1 | 23.8 |
| 04 | Calgary | 21.9 | 15.3 | 16.1 | 19.3 | 25.4 |
| 09 | Crossroads | 30.0 | 29.5 | 45.9 | 53.8 | 39.8 |
| 16 | Northern Lights | 17.6 | 29.6 | 11.9 | 36.7 | 39.9 |
| 14 | Peace | 16.0 | 15.9 | 31.9 | 12.1 | 52.2 |
| 10 | Capital | 23.3 | 30.6 | 30.5 | 48.0 | 58.1 |
| 12 | Lakeland | 14.5 | 20.6 | 15.5 | 25.5 | 59.2 |
| 15 | Keeweetinok Lakes | 46.7 | 34.5 | 45.5 | 52.4 | 58.6 |
| 17 | Northwestern | 15.4 | 95.6 | 301.7 | 157.0 | 124.0 |
| Annual Provincial Rate | | 18.5 | 18.3 | 19.7 | 26.2 | 31.8 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

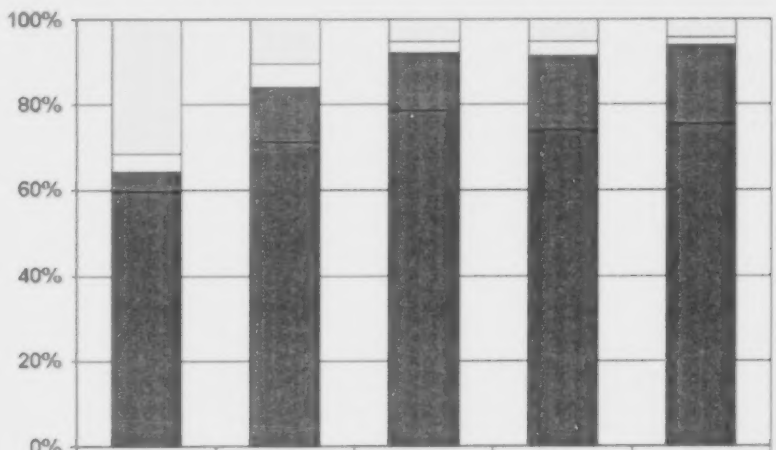
## 3.5 Treatment

In 1998, Alberta Health and Wellness released *Treatment Guidelines for Sexually Transmitted Diseases* describing the recommended antibiotic regimens for treating gonorrhea infection of the urogenital, rectal, and pharyngeal sites in adolescents, adults and pregnant women. In general, ciprofloxacin, cefixime or ceftriaxone followed by azithromycin or doxycycline are the recommended agents for treating gonorrhea infection in adults and adolescents. For pregnant women, cefixime or ceftriaxone followed by azithromycin or erythromycin are the recommended agents.

The *Treatment Guidelines* include important considerations for treating gonorrhea infections and are an important resource in delivering effective treatment. In 2003, revisions to the 1998 *Guidelines* were completed and Alberta Health and Wellness published the "*Alberta Treatment Guidelines: Sexually Transmitted Infections in Adolescents and Adults*". Copies of this more recent publication are available from the Data Fivepark Warehouse by faxing (403) 272-7774.

Approximately, ninety-six percent of the antibiotics used to treat gonorrhea in 2002 were one of the three primary antibiotics (ciprofloxacin, cefixime, and ceftriaxone) recommended by the *Treatment Guidelines (1998)*. Of these three drugs, ciprofloxacin was the most commonly used. (Figure 3.5.1)

**Figure 3.5.1:** Proportion of Gonorrhea Infections Treated with Ciprofloxacin, Cefixime, Ceftriaxone and Other Antibiotics




| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Other Drugs | 31.3% | 10.2% | 5.2% | 5.2% | 4.2% |
| Ceftriaxone | 4.6% | 5.8% | 2.9% | 3.4% | 2.1% |
| Cefixime | 4.6% | 12.5% | 13.2% | 17.3% | 18.3% |
| Ciprofloxacin | 59.6% | 71.5% | 78.8% | 74.1% | 75.4% |

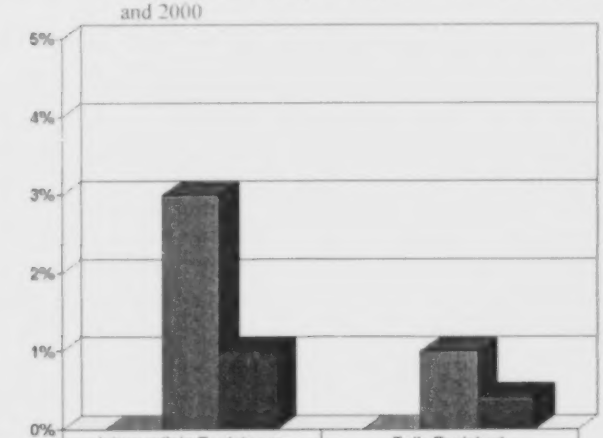
Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## 3.6 Antimicrobial Resistance

Since 1991, ciprofloxacin has been the recommended first line agent for the treatment of gonorrhea in Alberta, with cefixime and ceftriaxone recommended as alternate agents. In order to monitor the possible development of drug resistance, a review of the sociodemographic characteristics and antimicrobial susceptibility of 2,781 gonococcal isolates from 1991 to 2000 in Alberta was undertaken and completed in 2001.[14]

Sociodemographic findings revealed that 55% of those tested were male, with a mean age of 25 years (range 2 – 80 years). With regards to ethnicity, 37% were Caucasian and 20% were Aboriginal. Sexual orientation was inferred from gender of partner, with 89% determined to be heterosexual and 91% of all cases reported their sexual partners were in Canada. With respect to antimicrobial susceptibility, all gonococcal isolates were susceptible to ciprofloxacin in 1991, with 9 (3%) of isolates reported as being intermediately resistant and 2 (1%) fully resistant in 1994. In 2000, 2 (1%) of isolates were intermediately resistant and 1 (0.4%) fully resistant to ciprofloxacin. (Figure 3.6.1) Isolates demonstrating reduced susceptibility to ciprofloxacin were more likely to be obtained from persons identifying their ethnicity as "Oriental" ($p<0.0001$) and from sexual contacts of cases from areas with high prevalence of ciprofloxacin resistance ($p<0.0001$). The percentage of isolates producing beta lactamase fluctuated over this time period but did not significantly change with 5 (5%) of all isolates in 1991 and 9 (4%) in 2000. Tetracycline susceptibility also fluctuated with a low of 21% of all isolates susceptible in 1993 and 42% susceptible in 1994. Although all isolates remained susceptible to ceftriaxone, there was a gradual increase in the $MIC_{90}$ to ceftriaxone over time.

**Figure 3.6.1:** Proportion of Gonococcal Isolates Intermediately and Fully Resistant to Ciprofloxacin in Alberta, 1991, 1994, and 2000




| | Intermediate Resistance | Fully Resistant |
|---|---|---|
| 1991 | 0% | 0% |
| 1994 | 3% | 1% |
| 2000 | 1% | 0.4% |

Source: Singh AE et al. Trends in antimicrobial resistance to gonorrhea in Alberta, Canada, 1991-2000 - Presented at Interscience Conference on Antimicrobial Agents and Chemotherapy, San Diego, CA, September 2002

In summary, the trends in resistance of available gonococcal isolates to penicillin and tetracycline fluctuated between 1991 and 2000, but did not significantly increase over time. The use of ciprofloxacin did not result in an increase in antimicrobial resistance to this agent over time with less than 2% of isolates having reduced susceptibility in 2000. Those identifying their ethnicity as "oriental" and those with sexual partners from outside Canada were more likely to have isolates with reduced susceptibility to ciprofloxacin. Although all isolates remained susceptible to ceftriaxone, the upward drift in MIC is concerning and emphasizes the need for continued monitoring of antimicrobial susceptibilities in gonorrhea.

## 3.7 Outbreaks

During 1998 to 2002 there were two outbreaks identified in Alberta that involved gonorrhea infection. One of these occurred in the Northwestern Health Region, which is located in a largely rural northern region of Alberta, while the other occurred in the Capital Health Region, which is an urban region including the city of Edmonton. The following describes these outbreaks, and the response to them, in more detail.

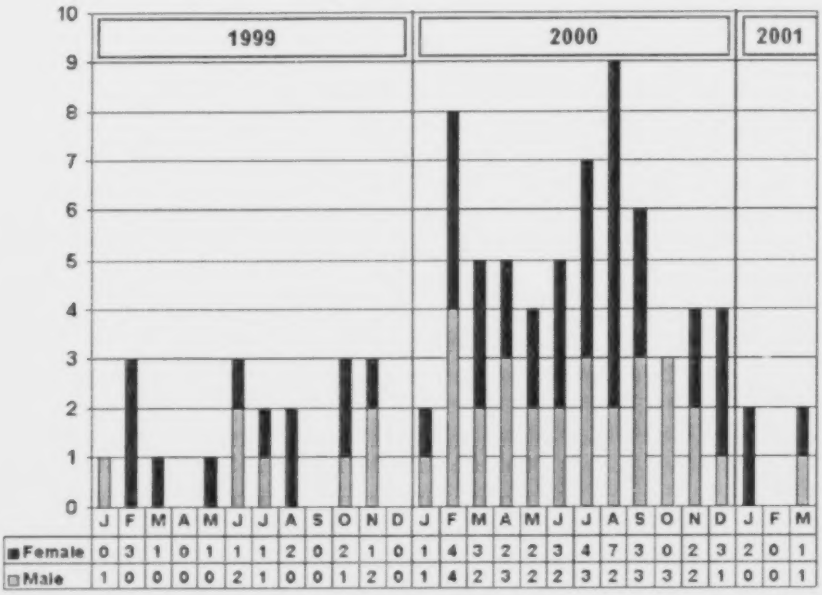
***Northwestern Region (17) – Gonorrhea Outbreak***[15]

Region 17 experienced a thirty-fold increase in the rate of reported cases of gonorrhea between January 1, 1999 and March 30, 2001 compared to the same period in the previous two years. An epidemiologic investigation was performed by a Field Epidemiologist seconded from Health Canada in conjunction with Alberta Health and Wellness, the Regional Health Authority and First Nations and Inuit Health Branch. Gonorrhea was reported in eighty-one individuals, aged fifteen to sixty years, with a mean age of twenty-five years over this time period. (Figure 3.7.1) Seventy-eight (96%) cases were in First Nations individuals and the remainder were Caucasian. Forty-six (57%) were female. During the peak period of the outbreak, persons aged 15 – 24 years accounted for nearly 2/3 of all cases.

The outbreak occurred mainly in three First Nations communities with these communities representing thirty percent of the population of the region and eighty-one percent of the outbreak cases. Information was available from sixty-seven (78%) of eighty-one cases who identified one hundred eleven contacts. The average number of reported partners per case rose from 1.1 partners in 1999 to 1.7 partners per case in 2000. Overall thirty-one percent of the outbreak cases reported having two or more sexual partners during the preceding six months. Twenty percent of named sexual partners resided outside the index patient's community. Rigorous case finding and partner tracing by the community nurses enabled successful location and treatment of eighty-one (77%) of the one hundred and eleven contacts.

A case control study was performed by the Field Epidemiologist and involved the administration of a telephone questionnaire to both cases, and a control population, asking about travel outside of their community. Cases were significantly more likely

**Figure 3.7.1:** Number of Cases of Gonorrhea by Gender for Each Month during January 1999 to March 2001, Northwestern Health Region 17, Alberta




| | J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D | J | F | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Female | 0 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 2 | 1 | 0 | 1 | 4 | 3 | 2 | 2 | 3 | 4 | 7 | 3 | 0 | 2 | 3 | 2 | 0 | 1 |
| Male | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 2 | 0 | 1 | 4 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 1 | 0 | 0 | 1 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*.

than controls (OR 3.5, 95% CI 1.3-9.5) to have attended a motel bar in a large neighboring town within the Northwestern Region. None of the study participants reported travel to the Northwest Territories where rising rates of gonorrhea have also been reported.

The remoteness of the communities and the link to the neighboring town bar suggests infection was imported into the region. Spread likely occurred due to casual partnering and within existing networks of sexual partners. It is likely that, along with limited media coverage in the communities, the community and regional STI partner notification nurses were able to successfully terminate the outbreak with aggressive case finding and treatment, and with tracing and treatment of sexual partners.

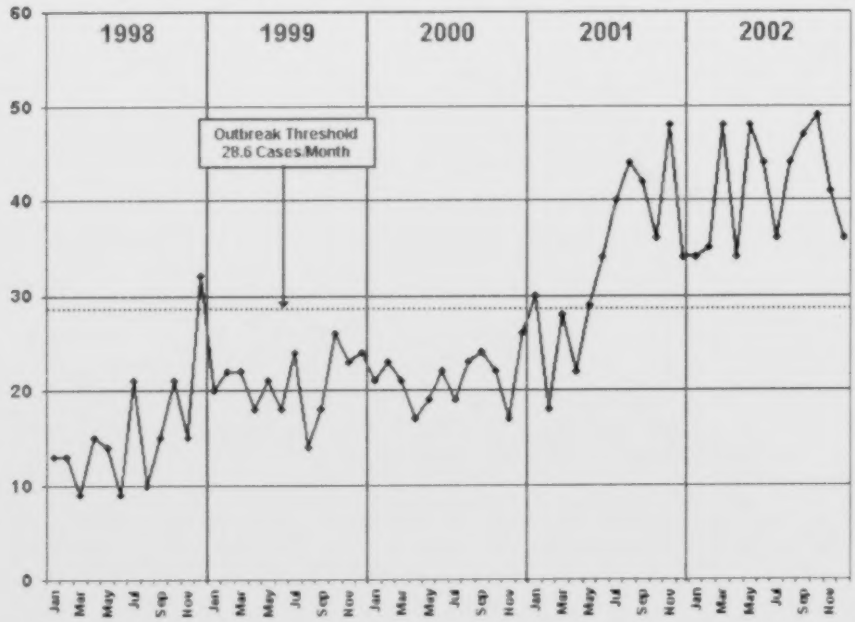
***Capital Health Region (10) – Gonorrhea Outbreak***[16]

The number of cases and rates of gonorrhea increased progressively in the Capital Health Region between 1998 and 2001, rising from 187 (23.3 per 100,000) in 1998 to 496 (57.9 per 100,000) in 2002. Figure 3.7.2 shows the number of reported cases based on treatment agency by month and the calculated outbreak threshold of 28.6 cases per month. The number of reported gonorrhea cases in Region 10 fell below the threshold in only three of the twenty-four months from January 2001 to December 2002; and from May 2001 to December 2002 the number of cases consistently remained over 33 per month.

Gonorrhea rates increased for both males and females in Region 10, but the increase was higher for males. Among males the incidence increased from 23.2 to 68.6 per 100,000 population in 1998 and 2002 ($p<0.01$) respectively, while among females the corresponding rates were 23.4 and 47.4 per 100,000 population ($p=0.03$). Preliminary data from the two laboratories which serve the Capital region suggest that although testing rates increased over this time period for both males and females, the percentage positivity has also increased, suggesting a true rise in rates. The highest age-specific incidence rate was among those aged 15 – 29 years at diagnosis (80% of females and 51.6% of males, $p=0.03$). Preliminary mapping techniques suggest that gonorrhea cases in this region were more likely to be living in the inner city. To the extent possible, sexual orientation was inferred from documented risk exposures and from the gender of contacts. This information suggests a primarily heterosexual outbreak.

Reasons for the outbreak are still unclear. The majority of infections are locally acquired and it is postulated that the start of the outbreak may be due to the transient influx of visitors or temporary workers into the city of Edmonton particularly during the summer of 2001. Interventions have included enhanced partner tracing, physician awareness and education, and outreach testing. The Capital Health region continued to experience high rates of gonorrhea into 2003 resulting in continuation of work toward controlling this outbreak.

**Figure 3.7.2:** Number of Gonorrhea Cases in the Capital Health Region (Region 10) by Month, January 1, 1998 to December 31, 2002




Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*.

## 3.8 Summary

- Gonorrhea is the third most common notifiable STI in Alberta with the majority of the infections being reported through a physician's office.
- Rates of gonorrhea infection have been increasing since 1998.
- Geographic variations in infection rates exist within the province, and in 2002 the highest rates occurred in some of the more northern regions of the province.
- Two regions, one rural and one urban, each experienced an outbreak between 1998 and 2002. The rural outbreak was successfully terminated, but efforts continued toward termination of the outbreak in the urban region beyond 2002.
- Overall, males have shown higher rates of infection than females during 1998 to 2002.
- Gonorrhea rates have generally increased for all age groups. Since 1998, rates have doubled for 15 – 19 year old females and for 20 – 24 year old males.
- The proportion of gonorrhea infection according to ethnicity has remained constant with Caucasians being the group most often affected. However, Aboriginals, who comprise only five percent of Alberta's population, are disproportionately affected by gonorrhea infection.
- Almost all cases of gonorrhea are treated according to treatment guidelines recommended by Alberta Health and Wellness.
- Antimicrobial resistance to the recommended agents for treatment of gonorrhea remains low. Monitoring for resistance remains important and is continuing.

# 4 Syphilis

**Causative Organism and Transmission**

Syphilis is caused by a type of bacteria known as a spirochete called *Treponema pallidum*. If left untreated, syphilis infection progresses through five different stages. These stages are known as: 1) primary, 2) secondary, 3) early latent, 4) late latent and 5) tertiary. During the primary, secondary and early latent stages, syphilis is considered to be infectious and may be transmitted through direct sexual contact with an infected individual and through infected blood, such as when sharing needles and other injection drug use equipment. Congenital syphilis may occur during pregnancy as mothers, at any stage of infection, can pass infection to their fetus.

**Symptoms and Complications**

*Infectious Syphilis:*

1) **Primary Syphilis** is characterized by the appearance of a painless ulcer, called a chancre, about 3 weeks (range: 10-90 days) after sexual contact with an infected person. Chancres usually occur at a location that was exposed to a partner's chancre. Depending on sexual practices, this could involve parts of the body other than the genitalia. The chancre gradually disappears, and in about one-third of untreated cases of primary syphilis there is progression to secondary syphilis.
2) **Secondary Syphilis** occurs about 4-6 weeks after primary syphilis and is characterized by a rash that may involve the palms of hands and soles of feet. It may be accompanied by fever, sore throat, hair loss and swelling of lymph nodes. This is the most infectious stage of syphilis infection. In about one-third of untreated secondary infections there is progression to latent infection.
3) **Early Latent Syphilis** is when a person has passed through primary and secondary syphilis, is asymptomatic and has been infected with syphilis for less than a year. Occasionally skin and mucous membrane lesions may recur during this stage.

*Non-Infectious Syphilis:*

4) **Late Latent Syphilis** is when a person has had syphilis for over a year. In this case the bacteria remain in the body and the individual is asymptomatic. At this stage a person is no longer considered infectious, although congenital transmission may still occur.
5) **Tertiary Syphilis** will occur in about one-third of untreated syphilis cases. In this stage the bacteria invades the brain, nerves, eyes, heart, blood vessels, liver, bones or joints. At this stage a person is not considered infectious, although congenital transmission may still occur.
6) **Congenital Syphilis** occurs when syphilis is transmitted to the fetus from the mother prior to birth. In some cases syphilis may cause miscarriage, stillbirth or prematurity. Infants born with congenital syphilis may not show symptoms initially, however, without treatment symptoms develop in the first few weeks following birth. Early signs may include enlarged liver, enlarged spleen, swollen lymph glands, skin and mouth sores, inflammation of bones, and anemia. After 2 years of age, if the infant has not been treated, late manifestations involving the brain (with hearing loss, mental retardation or seizure), eyes, bones, joints, teeth and skin may occur.

**Treatment**

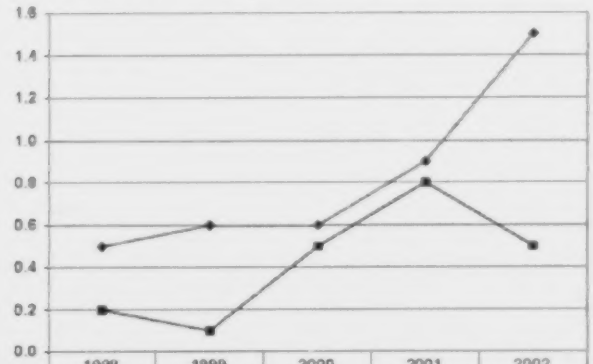
Once diagnosed, any stage of syphilis can be treated with appropriate antibiotics and should always be under the direction of an infectious disease STD specialist. This will stop further progression of disease and will prevent transmission of syphilis from mother to fetus. Syphilis can be cured with antibiotics; however, some tissue damage that occurs during later stages may be irreversible. Treatment, during primary, secondary and early latent stages, which are the infectious stages, will prevent further transmission between sexual partners. Antibiotic treatment of infants with congenital syphilis will ensure they are not infectious and will prevent serious complications.

Reference: Population and Public Health Branch, Health Canada. "Syphilis." Notifiable Diseases On-Line. 11 Dec. 2003. 19 Mar. 2004. < http://dsol-smed.hc-sc.gc.ca/dsol-smed/ndis/diseases/sype_e.html >.

## 4.1 National

Canada's national goal for syphilis infection is to reduce the rate of infectious syphilis to less than 0.5 per 100,000 by the year 2010. However, since 1997, the national rate of infectious syphilis infection has gradually been rising and in 2002 reached a high of 1.5 per 100,000.[17] For the past five years, Alberta's rates of infectious syphilis have been lower than the Canadian rate; and except for 2001, the rate has been at, or below, the national goal of 0.5 per 100,000. (Figure 4.1.1)

**Figure 4.1.1:** Rates per 100,000 of Reported Infectious Syphilis Infection for Canada and Alberta by Year, 1998-2002

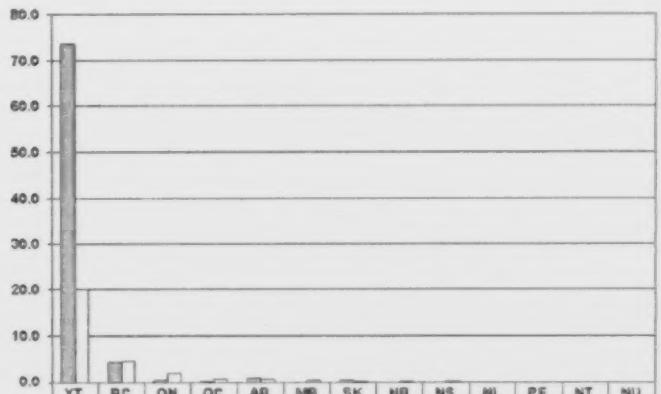



| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Canada | 0.5 | 0.6 | 0.6 | 0.9 | 1.5 |
| Alberta | 0.2 | 0.1 | 0.5 | 0.8 | 0.5 |

Source: Division of Sexual Health Promotion and STD Prevention and Control, Centre for Infection Disease Prevention and Control, Health Canada, 2003. Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

Across the country, each province except Newfoundland, Prince Edward Island, Northwest Territories and Nunavut reported at least one case of infectious syphilis in 2002. This yielded rates ranging from 0.1 to 20.1 per 100,000. The highest rate of infectious syphilis in 2002 was in the Yukon Territory at 20.1 per 100,000 but this was down from 73.6 in 2001. (Figure 4.1.2)

**Figure 4.1.2:** Incidence Rates per 100,000 of Reported Infectious Syphilis Infection by Province, Calendar Years 2001 and 2002

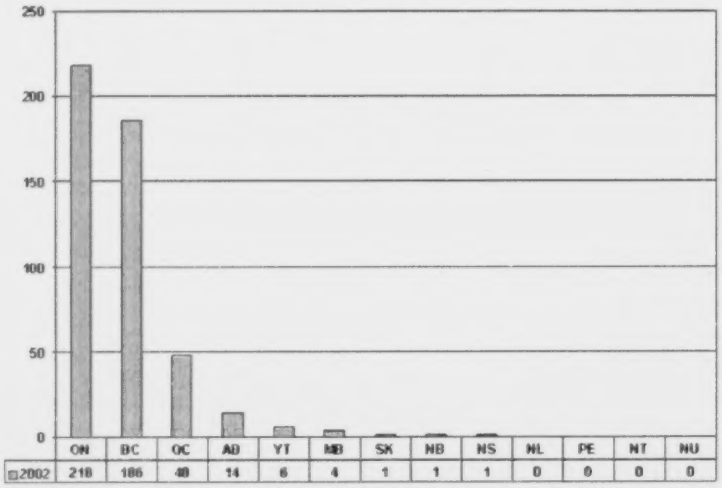



| | YT | BC | ON | QC | AB | MB | SK | NB | NS | NL | PE | NT | NU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2001 | 73.6 | 4.3 | 0.4 | 0.2 | 0.8 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2002 | 20.1 | 4.5 | 1.8 | 0.6 | 0.5 | 0.3 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |

Source: Health Canada, Population and Public Health Branch. "Reported cases and rates of notifiable STI from January 1 to December 31, 2002 and January 1 to December 31, 2001." 27 August 2003. 20 September 2003. <http://www.hc-sc.gc.ca/pphb-dgspsp/std-mts/stdcases-casmts/index.html>.

Alberta ranked fifth in Canada with a rate in 2002 of 0.5 per 100,000 and ranked fourth in numbers of cases with 14 infectious cases reported. (Figure 4.1.3)

**Figure 4.1.3:** Number of Reported Infectious Syphilis Infections by Province for Calendar Year 2002

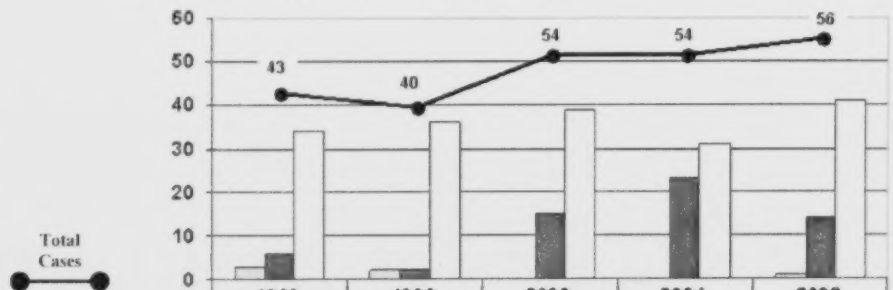



| | ON | BC | QC | AB | YT | MB | SK | NB | NS | NL | PE | NT | NU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2002 | 218 | 186 | 48 | 14 | 6 | 4 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |

Source: Health Canada, Population and Public Health Branch. "Reported cases and rates of notifiable STI from January 1 to December 31, 2002 and January 1 to December 31, 2001." 08 August 2003. 20 September 2003. <http://www.hc-sc.gc.ca/pphb-dgspsp/std-mts/stdcases-casmts/index.html>

Non-infectious syphilis is reported in Alberta, but this is not reported nationally. Therefore, it is not possible to compare rates of non-infectious syphilis across Canada. Figure 4.1.4 shows the number of congenital, infectious and non-infectious syphilis cases for Alberta for 1998 to 2002.

**Figure 4.1.4:** Incidence of Reported Congenital, Infectious, and Non-Infectious Syphilis Infections, and Overall Total Syphilis Infections, Alberta, 1998-2002




| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Congenital | 3 | 2 | 0 | 0 | 1 |
| Total Infectious | 6 | 2 | 15 | 23 | 14 |
| Total Non-Infectious | 34 | 36 | 39 | 31 | 41 |

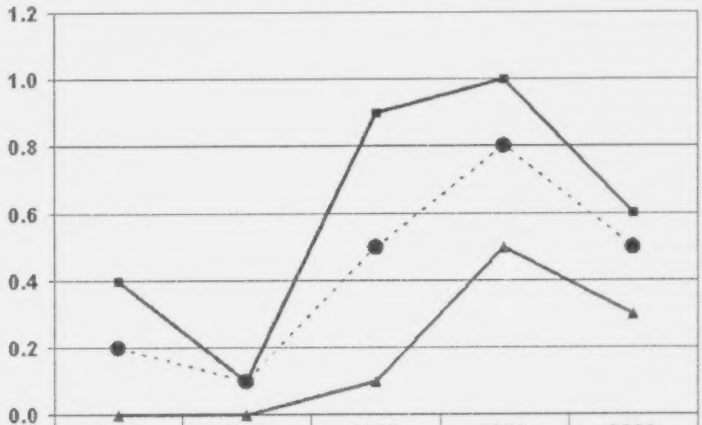
Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## 4.2 Age and Gender

*Infectious Syphilis*

Over the past five years the provincial rate of reported infectious syphilis infection peaked in 2001 at 0.8 per 100,000. During 1998 to 2002, males consistently had higher rates of infectious syphilis than females. In fact, from 1998 to 1999 there were no reported cases of infectious syphilis in females in the province. (Figure 4.2.1) The increase in female rates seen from 2000 to 2002, and the rise in male rates during 2000 and 2001 are a consequence of a syphilis outbreak described in detail in section 4.8.

**Figure 4.2.1:** Incidence Rates per 100,000 of Reported Infectious Syphilis Infections for the Province and According to Gender, Alberta, 1998-2002

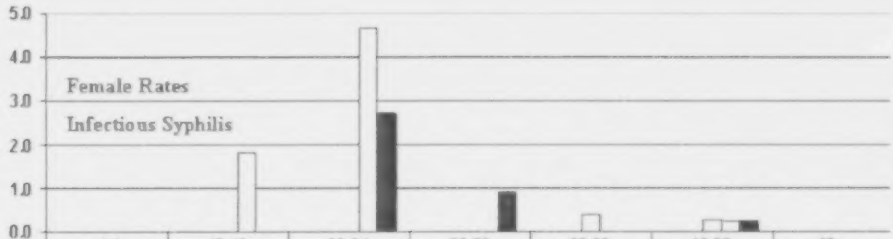



| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Province | 0.2 | 0.1 | 0.5 | 0.8 | 0.5 |
| Male | 0.4 | 0.1 | 0.9 | 1.0 | 0.6 |
| Female | 0 | 0 | 0.1 | 0.5 | 0.3 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

The highest rate of reported infectious syphilis amongst males during 1998 to 2002, was 3.7 per 100,000. This occurred during 2000 in the 25 – 29 year age group. For females, the highest rate of reported infectious syphilis was 4.7 per 100,000 among 20 – 24 year olds and occurred during 2001. (Figures 4.2.2 and 4.2.3) Appendix H shows the *numbers* of reported infectious syphilis by gender and age group. Appendix I shows the *proportion* of those infected by age group during 1998 to 2002.

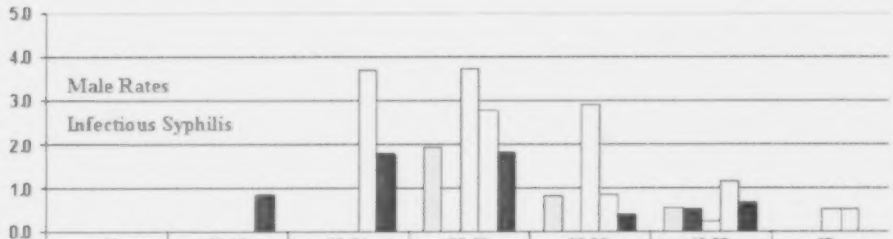
**Figure 4.2.2:** Incidence Rates per 100,000 of Reported Infectious Syphilis by Age Group for Females, Alberta, 1998-2002*




| | <14 | 15-19 | 20-24 | 25-29 | 30-39 | 40-59 | 60> |
|---|---|---|---|---|---|---|---|
| □1998 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ■1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| □2000 | 0 | 0 | 0 | 0 | 0.4 | 0.3 | 0 |
| □2001 | 0 | 1.8 | 4.7 | 0 | 0 | 0.2 | 0 |
| ■2002 | 0 | 0 | 2.7 | 0.9 | 0 | 0.2 | 0 |

*There was one case of congenital syphilis reported in 2002 in a female less that one year of age. This case was excluded in calculation of rates.

**Figure 4.2.3:** Incidence Rates per 100,000 of Reported Infectious Syphilis by Age Group for Males, Alberta, 1998-2002



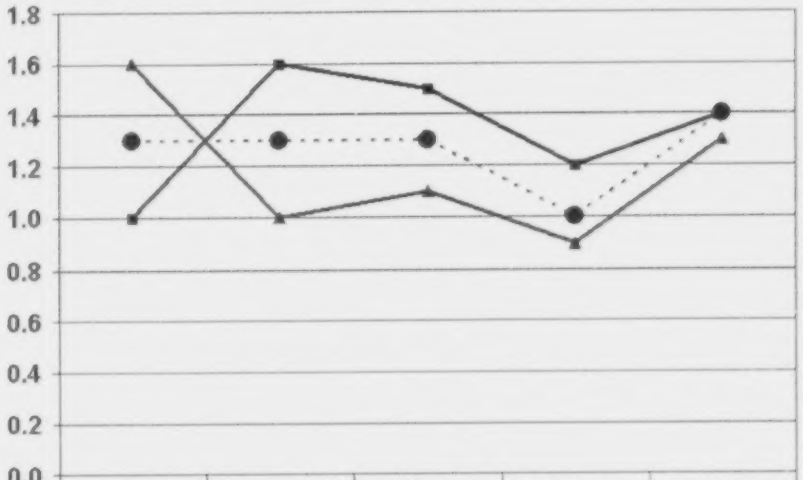

| | <14 | 15-19 | 20-24 | 25-29 | 30-39 | 40-59 | 60> |
|---|---|---|---|---|---|---|---|
| □1998 | 0 | 0 | 0 | 1.9 | 0.8 | 0.5 | 0 |
| ■1999 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 |
| □2000 | 0 | 0 | 0 | 3.7 | 2.9 | 0.2 | 0.5 |
| □2001 | 0 | 0 | 3.7 | 2.8 | 0.8 | 1.2 | 0.5 |
| ■2002 | 0 | 0.8 | 1.8 | 1.8 | 0.4 | 0.7 | 0 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STI Database (1996-2002)*, June 2003.

*Non-Infectious Syphilis*

In 1998, the rate of non-infectious syphilis was slightly higher in females than in males (1.6 and 1.0 per 100,000 respectively). In 1999 this reversed, and since that time males have shown higher rates; although the gap between male and female rates has narrowed. (Figure 4.2.4)

**Figure 4.2.4:** Incidence Rates per 100,000 of Reported Non-Infectious Syphilis Infections for the Province and According to Gender, Alberta, 1998-2002

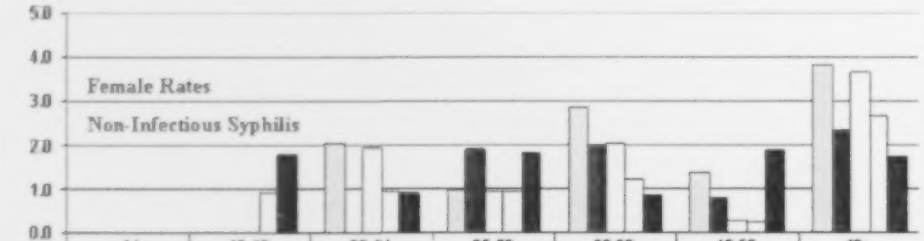



| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Province | 1.3 | 1.3 | 1.3 | 1.0 | 1.4 |
| Male | 1.0 | 1.6 | 1.5 | 1.2 | 1.4 |
| Female | 1.6 | 1.0 | 1.1 | 0.9 | 1.3 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

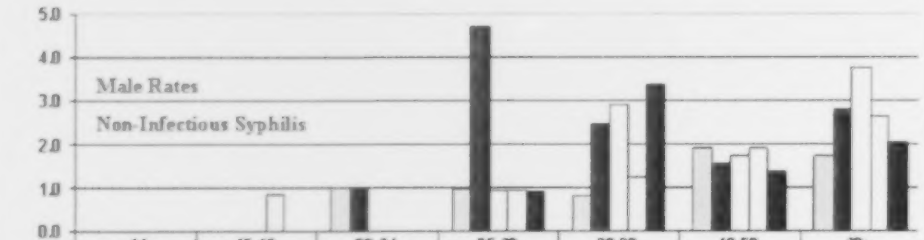
The highest rate of reported non-infectious syphilis amongst males between 1998 and 2002 was 4.7 per 100,000. This occurred during 1999 in the 25 – 29 year age group. For females, the highest rate of reported non-infectious syphilis was 3.8 per 100,000 in the 60 year old and older group and occurred during 1998. (Figures 4.2.5 and 4.2.6) Appendix J shows the *numbers* of reported non-infectious syphilis by gender and age group. Appendix I shows the *proportion* of those infected by age group during 1998 to 2002.

**Figure 4.2.5:** Incidence Rates per 100,000 of Reported Non-Infectious Syphilis by Age Group for Females, Alberta, 1998-2002




| | <14 | 15-19 | 20-24 | 25-29 | 30-39 | 40-59 | 60> |
|---|---|---|---|---|---|---|---|
| □1998 | 0 | 0 | 2.0 | 1.0 | 2.8 | 1.4 | 3.8 |
| ■1999 | 0 | 0 | 0 | 1.9 | 2.0 | 0.8 | 2.3 |
| □2000 | 0 | 0 | 1.9 | 0.9 | 2.1 | 0.3 | 3.6 |
| □2001 | 0 | 0.9 | 0.9 | 0.9 | 1.2 | 0.2 | 2.7 |
| ■2002 | 0 | 1.8 | 0.9 | 1.8 | 0.8 | 1.9 | 1.7 |

**Figure 4.2.6:** Incidence Rates per 100,000 of Reported Non-Infectious Syphilis by Age Group for Males, Alberta, 1998-2002



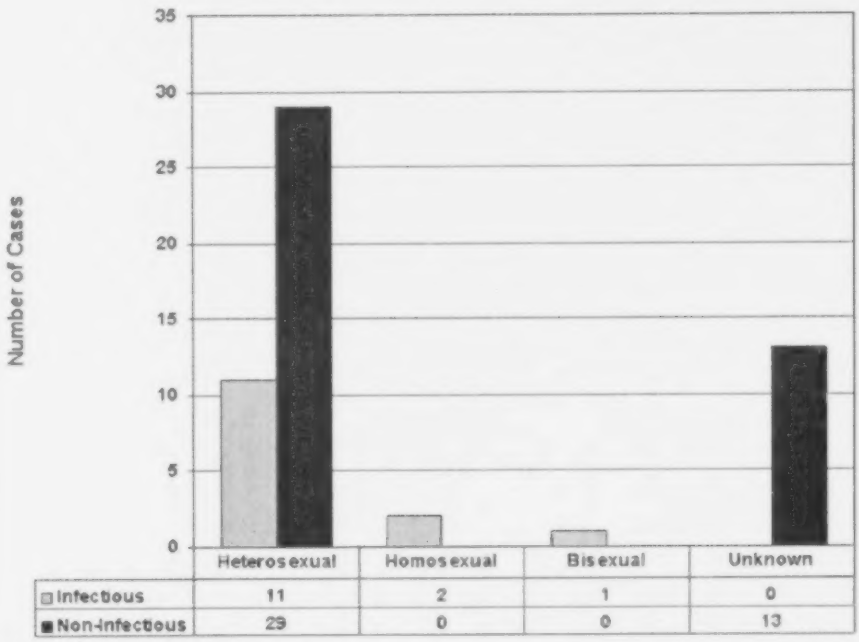

| | <14 | 15-19 | 20-24 | 25-29 | 30-39 | 40-59 | 60> |
|---|---|---|---|---|---|---|---|
| □1998 | 0 | 0 | 1.0 | 1.0 | 0.8 | 1.9 | 1.7 |
| ■1999 | 0 | 0 | 1.0 | 4.7 | 2.5 | 1.5 | 2.8 |
| □2000 | 0 | 0 | 0 | 0.9 | 2.9 | 1.7 | 3.8 |
| □2001 | 0 | 0.9 | 0 | 0.9 | 1.3 | 1.9 | 2.6 |
| ■2002 | 0 | 0 | 0 | 0.9 | 3.4 | 1.4 | 2.0 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## 4.3 Sexual Preference

Information on sexual preference was available for 2002. This showed that 11 (79%) of people with *infectious* syphilis were identified as heterosexual with three identified as either homosexual or bisexual. Of people with *non-infectious* syphilis, for whom sexual preference was known, all were identified as heterosexual. The 13 cases for whom sexual preference was "unknown", were *non-infectious* cases and included one infant case of congenital syphilis for whom sexual preference was not applicable. (Figure 4.3.1)

**Figure 4.3.1:** Sexual Preference as Identified by Those with Infectious and Non-Infectious Syphilis During Calendar Year 2002, Alberta



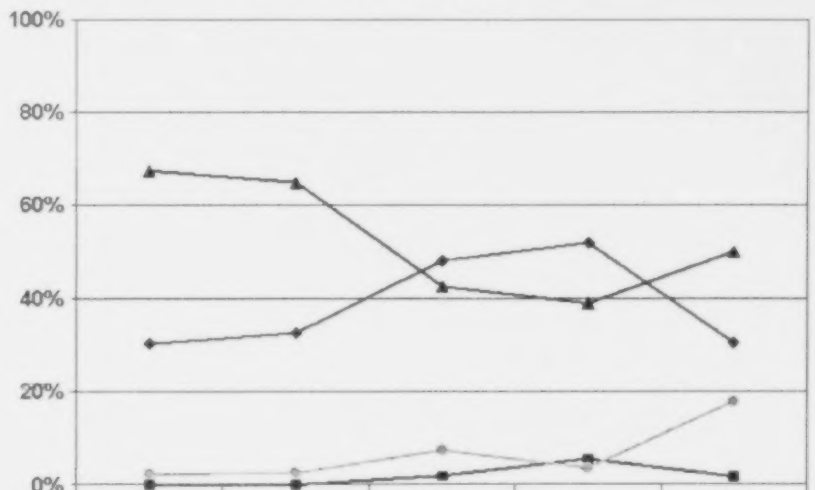

| | Heterosexual | Homosexual | Bisexual | Unknown |
|---|---|---|---|---|
| Infectious | 11 | 2 | 1 | 0 |
| Non-infectious | 29 | 0 | 0 | 13 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## 4.4 Ethnicity

In 1998 and 1999 the majority of people with reported syphilis infection (infectious and non-infectious combined) identified themselves as belonging to the "other" ethnic group, which includes "Black", "Oriental", "Other Asian" and other ethnic groups (excluding Caucasian and Aboriginal). During 2000 and 2001, this changed with the majority identifying themselves as Caucasian. (Figure 4.4.1) This shift corresponded to the outbreak in 2000 and 2001 which is described in section 4.8. There were no reported cases of infectious or non-infectious syphilis in Aboriginals during 1998 and 1999, and between 2000 and 2002 only five individuals identified themselves as either "North American Indian" or "Métis". Therefore, the contribution of Aboriginals to the numbers of people affected with syphilis has been small during 1998 to 2002. There are differences in ethnicity between those infected with infectious and non-infectious syphilis and this is shown in figures 4.4.2 and 4.4.3.

**Figure 4.4.1:** Proportion of Reported Infectious and Non-Infectious Syphilis Infections According to Self-Reported Ethnic Group by Year – Alberta, 1998-2002



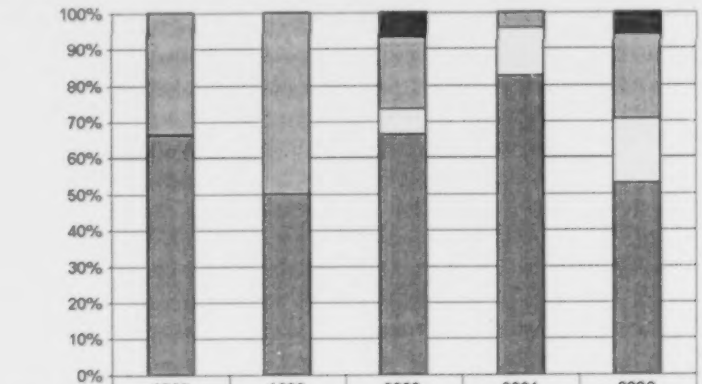

| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Caucasian | 30.2% | 32.5% | 48.1% | 51.9% | 30.4% |
| Aboriginal* | 0.0% | 0.0% | 1.9% | 5.6% | 1.8% |
| Other** | 67.4% | 65.0% | 42.6% | 38.9% | 50.0% |
| Unknown | 2.3% | 2.5% | 7.4% | 3.7% | 17.9% |

* "Aboriginal" includes: First Nations, Metis, Inuit

** "Other" includes individuals identifying themselves as "Black", "Oriental", "Other Asiatic" or "Other"

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STI Database (1996-2002)*, June 2003

**Figure 4.4.1:** Proportion and Number of Reported Infectious Syphilis Infections According to Self-Reported Ethnic Group by Year – Alberta, 1998-2002



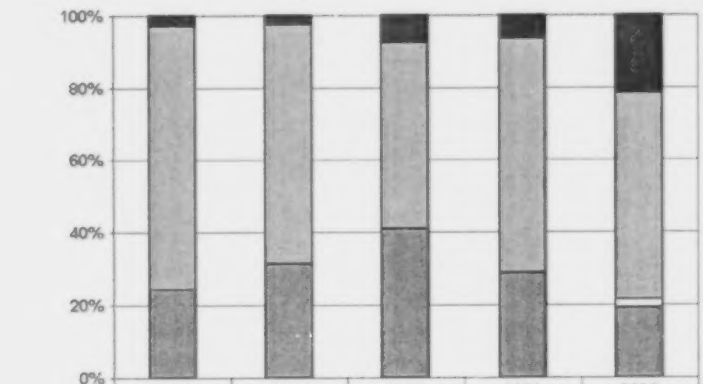

| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Unknown | 0 | 0 | 1 | 0 | 1 |
| Other** | 2 | 1 | 3 | 1 | 4 |
| Aboriginal* | 0 | 0 | 1 | 3 | 3 |
| Caucasian | 4 | 1 | 10 | 19 | 9 |

* "Aboriginal" includes: First Nations, Metis, Inuit

** "Other" includes individuals identifying themselves as "Black", "Oriental", "Other Asiatic", or "Other"

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

**Figure 4.4.1:** Proportion and Number of Reported Non-Infectious Syphilis Infections According to Self-Reported Ethnic Group by Year – Alberta, 1998-2002




| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Unknown | 1 | 1 | 3 | 2 | 9 |
| Other** | 27 | 25 | 20 | 20 | 24 |
| Aboriginal* | 0 | 0 | 0 | 0 | 1 |
| Caucasian | 9 | 12 | 16 | 9 | 8 |

* "Aboriginal" includes: First Nations, Metis, Inuit

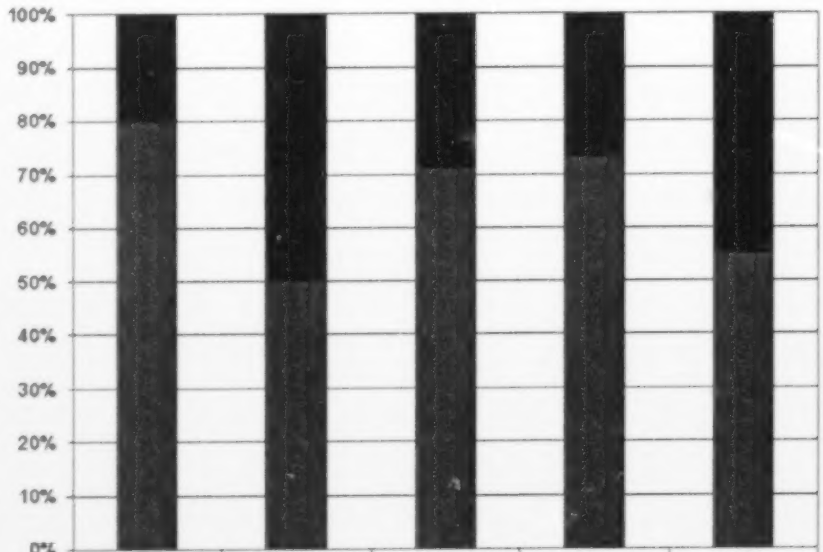
** "Other" includes individuals identifying themselves as "Black", "Oriental", "Other Asiatic", or "Other"

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## 4.5 Country of Birth

Information related to country of birth was available for infectious and non-infectious syphilis cases in Alberta for 1998 to 2002. Therefore, "country of birth" was used to identify "Canadian-born" and "foreign-born" individuals who were reported to be infected with syphilis. Figures 4.5.1 and 4.5.2 show the proportion of infectious and non-infectious syphilis according to country of birth. Included among the non-infectious cases are six "congenital syphilis" cases. During the five year time period, one of these congenital cases was reported in an infant less than one year of age. Of the six congenital cases, five occurred in those identified as foreign-born (three in 1998 and two in 1999). The single Canadian-born case was the infected infant reported in 2002. In general, the majority of reported infectious cases of syphilis have occurred in the Canadian-born, while the majority of reported non-infectious cases have occurred in the foreign-born.

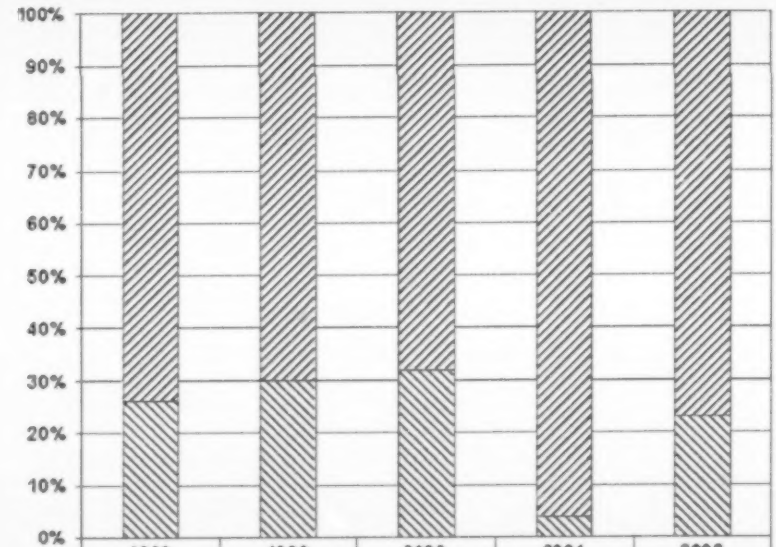
**Figure 4.5.1:** Proportion of Reported Infectious Syphilis in Canadian Born (CB) and Foreign-Born (FB) Persons, Alberta, 1998-2002




| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| FB Infectious | 20% | 50% | 29% | 27% | 45% |
| CB Infectious | 80% | 50% | 71% | 73% | 55% |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness. *STD Database (1996-2002)*, June 2003

**Figure 4.5.1:** Proportion of Reported Non-Infectious Syphilis in Canadian Born (CB) and Foreign-Born (FB) Persons, Alberta, 1998-2002




| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| FB Non-Infectious | 74% | 70% | 68% | 96% | 77% |
| CB Non-Infectious | 26% | 30% | 32% | 4% | 23% |

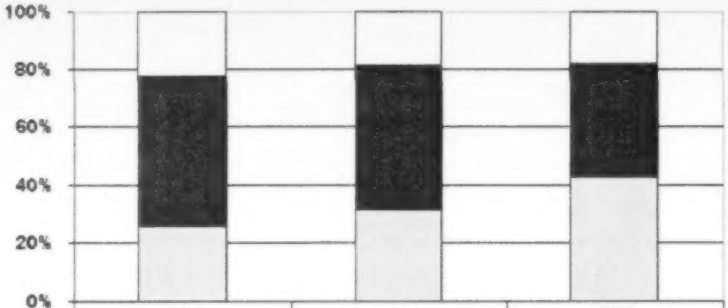
Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## 4.6 Geographic Distribution

***Reporting Agency***

The proportion of cases reported through physician offices has increased from 26% in 2000 to 43% in 2002. The majority of cases are reported through the Edmonton and Calgary STD clinics, with the Calgary Clinic reporting over twice as many cases as Edmonton during 2000 to 2002. (Figure 4.6.1) (See Section 4.8: Calgary Regional Health Authority (4) – Infectious Syphilis Outbreak)

**Figure 4.6.1:** Proportion of Reported Infectious and Non-Infectious Syphilis Infection by Reporting Agency, With Number of Cases Reported, 2000-2001




| | 2000 | 2001 | 2002 |
|---|---|---|---|
| □ Fort McMurray Clinic | 0 | 0 | 0 |
| □ Edmonton Clinic | 12 | 10 | 10 |
| ■ Calgary Clinic | 28 | 27 | 22 |
| □ Physician | 14 | 17 | 24 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

### *Cases According to Health Region*

The Calgary Regional Health Authority reported 53.6% of syphilis cases in the province during 2002. The Capital Region reported 30.4% and the remaining 19% of syphilis cases were reported from six other health regions. (Figure 4.6.2) There were nine regions in Alberta with no reported syphilis cases in 2002 and four of these regions had no reported cases during 1998 to 2002. These were Health Authority #5, Keeweetinok Lakes, Northern Lights and Northwestern Health Regions. Appendix K gives the number of infectious and non-infectious syphilis cases reported according to health region for 1998 to 2002.

**Figure 4.6.2:** Proportion and Number of Reported Infectious and Non-Infectious Syphilis Infection by Health Region in 2002

| Health Region | | # of Cases | % of Cases |
|---|---|---|---|
| 03 | Headwaters | 0 | 0.0 |
| 05 | Health Auth. #5 | 0 | 0.0 |
| 08 | Westview | 0 | 0.0 |
| 09 | Crossroads | 0 | 0.0 |
| 11 | Aspen | 0 | 0.0 |
| 13 | Mistahia | 0 | 0.0 |
| 15 | Keewootinok Lakes | 0 | 0.0 |
| 16 | Northern Lights | 0 | 0.0 |
| 17 | Northwestern | 0 | 0.0 |
| 02 | Palliser | 1 | 1.8 |
| 07 | East Central | 1 | 1.8 |
| 12 | Lakeland | 1 | 1.8 |
| 14 | Peace | 1 | 1.8 |
| 06 | David Thompson | 2 | 3.6 |
| 01 | Chinook | 3 | 5.4 |
| 10 | Capital | 17 | 30.4 |
| 04 | Calgary | 30 | 53.6 |
| | Total | 56 | 100.00 |

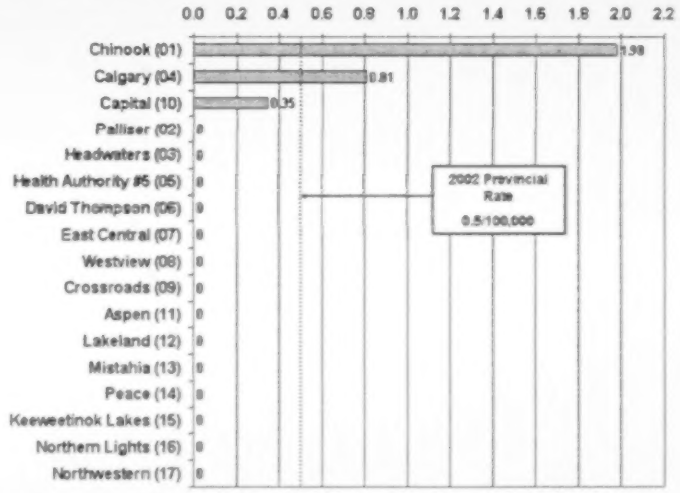
Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

### *Rates According to Health Region*

The overall crude rate for **infectious syphilis** reported in Alberta during 2002 (rounded to the nearest tenth) was 0.5 per 100,000. Of the three regions reporting infectious cases in 2002 (Chinook, Calgary Regional, and Capital), rates ranged between 0.35 and 1.98 per 100,000. (Figure 4.6.3) Table 4.6.1 gives the rates per 100,000 for reported infectious syphilis by health region for 1998 to 2002.

The overall crude rate for **non-infectious syphilis** reported in Alberta during 2002 was 1.36 per 100,000. Of the seven regions reporting non-infectious cases in 2002 (Peace, Calgary Regional, Capital, Palliser, David Thompson, Lakeland, and East Central), rates ranged between 0.97 and 4.01 per 100,000. (Figure 4.6.4) Table 4.6.2 gives the rates per 100,000 for reported non-infectious syphilis by health region for 1998 to 2002.

**Figure 4.6.3:** Rates per 100,000 Population of Reported Infectious Syphilis by Health Region, Alberta, 2002



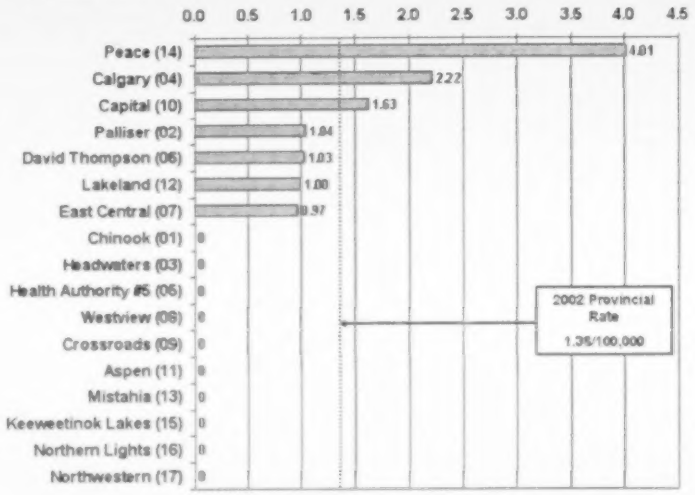

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

**Table 4.6.1:** Rates of Reported Infectious Syphilis per 100,000 by Health Region, 1998-2002

| Health Region | | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|
| 01 | Chinook | 0 | 0 | 0 | 0.66 | 1.98 |
| 02 | Palliser | 0 | 0 | 0 | 0 | 0 |
| 03 | Headwaters | 0 | 0 | 0 | 0 | 0 |
| 04 | Calgary | 0.56 | 0.22 | 1.38 | 1.76 | 0.81 |
| 05 | Health Authority #5 | 0 | 0 | 0 | 0 | 0 |
| 06 | David Thompson | 0 | 0 | 0 | 0 | 0 |
| 07 | East Central | 0 | 0 | 0 | 0 | 0 |
| 08 | Westview | 0 | 0 | 0 | 0 | 0 |
| 09 | Crossroads | 0 | 0 | 0 | 0 | 0 |
| 10 | Capital | 0.12 | 0.00 | 0.24 | 0.47 | 0.35 |
| 11 | Aspen | 0 | 0 | 0 | 1.05 | 0 |
| 12 | Lakeland | 0 | 0 | 0 | 0 | 0 |
| 13 | Mistahia | 0 | 0 | 0 | 0 | 0 |
| 14 | Peace | 0 | 0 | 0 | 0 | 0 |
| 15 | Keeweetinok | 0 | 0 | 0 | 0 | 0 |
| 16 | Northern Lights | 0 | 0 | 0 | 0 | 0 |
| 17 | Northwestern | 0 | 0 | 0 | 0 | 0 |
| Annual Provincial Rate | | 0.21 | 0.07 | 0.51 | 0.76 | 0.45 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

**Figure 4.6.4:** Rates per 100,000 Population of Reported Non-Infectious Syphilis by Health Region, Alberta, 2002




Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

**Table 4.6.2:** Rates of Reported Non-Infectious Syphilis per 100,000 by Health Region, 1998-2002

| Health Region | | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|
| 01 | Chinook | 0 | 0.67 | 0.67 | 0 | 0 |
| 02 | Palliser | 0 | 0 | 0 | 1.05 | 1.04 |
| 03 | Headwaters | 1.40 | 0 | 0 | 0 | 0 |
| 04 | Calgary | 2.58 | 2.17 | 2.55 | 2.28 | 2.22 |
| 05 | Health Authority #5 | 0 | 0 | 0 | 0 | 0 |
| 06 | David Thompson | 0.56 | 0 | 0 | 0.53 | 1.03 |
| 07 | East Central | 0 | 0.99 | 0.99 | 0 | 0.97 |
| 08 | Westview | 1.12 | 0 | 0 | 0 | 0 |
| 09 | Crossroads | 0 | 2.11 | 0 | 0 | 0 |
| 10 | Capital | 1.25 | 1.71 | 1.57 | 0.71 | 1.63 |
| 11 | Aspen | 0 | 0 | 0 | 1.05 | 0 |
| 12 | Lakeland | 0 | 1.03 | 0 | 0 | 1.00 |
| 13 | Mistahia | 1.16 | 0 | 0 | 0 | 0 |
| 14 | Peace | 0 | 0 | 0 | 0 | 4.01 |
| 15 | Keeweetinok | 0 | 0 | 0 | 0 | 0 |
| 16 | Northern Lights | 0 | 0 | 0 | 0 | 0 |
| 17 | Northwestern | 0 | 0 | 0 | 0 | 0 |
| Annual Provincial Rate | | 1.30 | 1.30 | 1.31 | 1.03 | 1.36 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

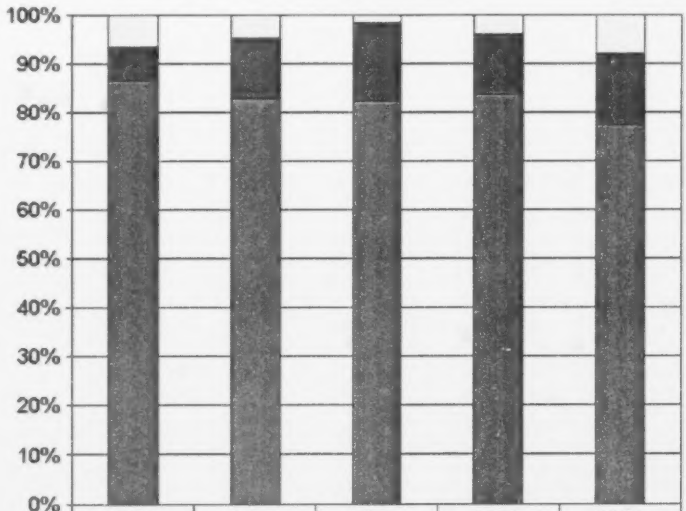
## 4.7 Treatment

In 1998, Alberta Health and Wellness released *Treatment Guidelines for Sexually Transmitted Diseases* describing the recommended antibiotic regimens for treating for primary, secondary, early latent and late latent syphilis infections in adolescents, adults and pregnant women. In general, benzathine penicillin is the recommended agent for treating these syphilis infections in adults and adolescents, with doxycycline as a possible alternative. For pregnant women, benzathine penicillin is the recommended agent and Crystalline penicillin G is the recommended antibiotic for cases of neurosyphilis. Treatment considerations for the neonate are also included in the *Treatment Guidelines*. All cases of syphilis should be, and are, treated in consultation with an STD specialist.

The *Treatment Guidelines* include important considerations for treating syphilis infections and are an important resource in delivering effective treatment. In 2003, revisions to the 1998 *Guidelines* were completed and Alberta Health and Wellness published the "*Alberta Treatment Guidelines: Sexually Transmitted Infections in Adolescents and Adults*". Copies of this more recent publication are available from the Data Fivepark Warehouse by faxing (403) 272-7774.

Over ninety percent of antibiotics recorded as being used to treat syphilis infections in Alberta during 2002 involved one of the two antibiotics (benzathine penicillin and doxycycline) recommended in the *Treatment Guidelines (1998)*. This was consistent from 1998 to 2002, with the highest proportion (98.4%) occurring in the year 2000. (Figure 4.7.1)

**Figure 4.7.1:** Proportion Reported Infectious and Non-Infectious Syphilis Cases Treated with Benzathine Penicillin, Doxycycline, and Other Antibiotics




| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| □ Other Drugs | 6.7% | 4.9% | 1.6% | 4.1% | 8.0% |
| ■ Doxycycline | 6.7% | 12.2% | 16.1% | 12.2% | 14.8% |
| ■ Benzathine Penicillin | 86.7% | 82.9% | 82.3% | 83.8% | 77.3% |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003

## 4.8 Outbreaks[18]

During 1998 to 2002 there was one outbreak of infectious syphilis identified in Alberta. This involved the Calgary Regional Health Authority, a large urban area in the south of Alberta. The following describes this outbreak.

***Calgary Regional Health Authority (4) – Infectious Syphilis Outbreak***

Between September 2000 and June 2001, the Calgary Regional Health Authority reported thirty-two cases of infectious syphilis. This corresponded to rates of 0.9 per 100,000 population during 2000, and 1.8 per 100,000 during 2001. The first two cases were identified in September 2000, and were the first two cases of locally acquired syphilis in Alberta since the mid 1980s.

Of the cases identified between September 2000 and June 2001, thirteen cases were identified among men who have sex with men (MSM), with one additional case in a male with male-to-male sex in December 2001. Among these fourteen cases, four were linked to sexual contacts residing in the city of Vancouver, British Columbia, which has reported an ongoing outbreak of infectious syphilis since mid-1997; and, one was linked to a sexual contact in Montreal, Quebec, where an outbreak of infectious syphilis among MSM is ongoing.

During May 2001 and April 2002 there were seventeen cases of infectious syphilis identified among heterosexuals. The majority of cases were in Caucasian (79% of MSM and 88% of heterosexuals). Several interesting differences were noted between the two risk groups. In general, MSM were older than the heterosexuals with a median age of thirty-seven (26 – 57) and twenty-four (19 – 36) years respectively. Thirty-six percent of MSM were co-infected with HIV while none of the heterosexuals tested positive for anti-HIV antibody. Four (29%) of the MSM used a single internet chat room to arrange sexual contact with anonymous partners. The sexual contact was initiated in bars and/or bathhouses in nearly half of MSM. Among heterosexuals, sixty-five percent were either commercial sex workers (CSW) or their clients. Seventy-one percent of MSM reported excessive alcohol use while forty-one percent of heterosexuals reported injecting crack cocaine.

Ninety-three percent of MSM were diagnosed with primary or secondary syphilis and ninety percent were diagnosed with infectious syphilis with symptoms characteristic of syphilis infection. A smaller proportion (65%) of heterosexuals were diagnosed with primary or secondary syphilis with the majority of infections diagnosed through routine STI testing or contact tracing. On average, more contacts were reported among heterosexuals than among MSM (3[±2] vs. 2[±1] reported contact/case[±SD] respectively). Although only seven percent of MSM were co-infected with a STI other than HIV at the time of syphilis diagnosis, sixty-four percent had a history of such infections.

Interventions included enhanced outreach to bathhouses/bars frequented by MSM, news articles in local gay magazines and enhanced outreach testing and awareness activities including community organizations such as the local needle exchange sites. Alerts were also issued to local physicians and clinics in the regional health authority.

## 4.9 Summary

- Non-infectious and infectious syphilis are the fourth and fifth most common notifiable STI in Alberta.
- Most syphilis infections have been reported through one of the STD clinics, but the proportion of infections reported by physicians has increased.
- Reported cases of infectious syphilis were only a very small proportion of the overall reported syphilis cases in Alberta during 1998 and 1999. This changed in 2000 and 2001 when a rise in infectious cases was attributed to an outbreak largely affecting the Calgary Health Region.
- Males have shown higher rates of infectious syphilis than females, but this gap has narrowed by 2002.
- Non-infectious syphilis cases also affect both genders and since 1999, males have had higher rates than females. However, similar to infectious syphilis, the gap in non-infectious rates between males and females has also narrowed.
- Those infected with non-infectious syphilis tend to be older than those infected with infectious syphilis.
- During 1998, 1999 and 2002, the majority of those with syphilis (infectious and non-infectious) identified themselves as non-Caucasian and non-Aboriginal. During the outbreak in 2000 and 2001 most identified themselves as Caucasian.
- Comparison of birth country between infectious and non-infectious cases revealed that the majority of infectious cases as Canadian-born, and the majority of non-infectious cases as foreign-born.
- Over 90% of syphilis cases are treated with either benzathine penicillin or doxycycline, the two recommended antimicrobial agents, and all of the reported cases were treated in consultation with an infectious disease specialist.

# 5 Nongonococcal Urethritis and Mucopurulent Cervicitis

**Causative Organism and Transmission**[19, 20]

Nongonococcal urethritis (NGU) is a common STI affecting males that causes inflammation of the urethra. Mucopurulent cervicitis (MPC) is a common STI in females causing inflammation of the cervix. The actual organism causing the infection may be identified by culture, but in many cases the causative organism is not identified. NGU and MPC are spread through direct sexual contact. It is also possible for infection to be passed to newborns of infected mothers, possibly causing pneumonia or eye infections.

**Symptoms and Complications**

There are not always symptoms associated with NGU and MPC. If symptoms do develop, they usually occur within one to five weeks following infection. Symptoms for males with NGU, may include discharge from the penis, and itching or burning during or after urination. Symptoms for females with MPC, may include an unusual vaginal discharge, irregular menstrual bleeding or discomfort during intercourse. Untreated NGU/MPC may result in PID in females, and could cause sterility in both genders.

**Treatment**

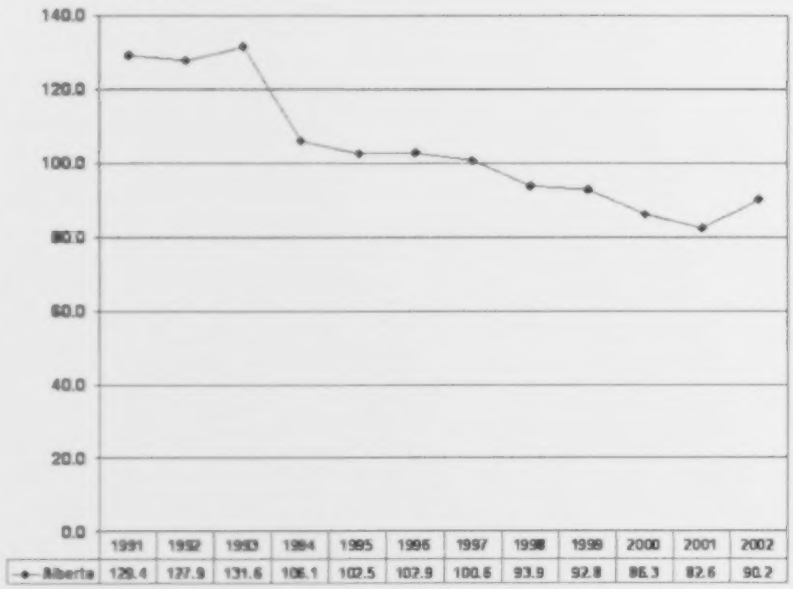
Once diagnosed with NGU or MPC, treatment with appropriate antibiotics will cure the infection.

## 5.1 National

Surveillance data for nongonococcal urethritis (NGU) and mucopurulent cervicitis (MPC) are available for Alberta, but these infections are not reported at the national level. Therefore, national trends and comparisons between provinces are not possible.

From 1993 to 2001, overall rates of reported NGU and MPC in Alberta declined. In 1993, the rate was 131.6 per 100,000 and by 2001 the rate had fallen to 82.6 per 100,000. However, the rate of reported infection for 2002 showed an increase to 90.2 per 100,000. (Figure 5.1.1)

**Figure 5.1.1:** Rates per 100,000 of Reported NGU/MPC Infection for Alberta by Year, 1991-2002



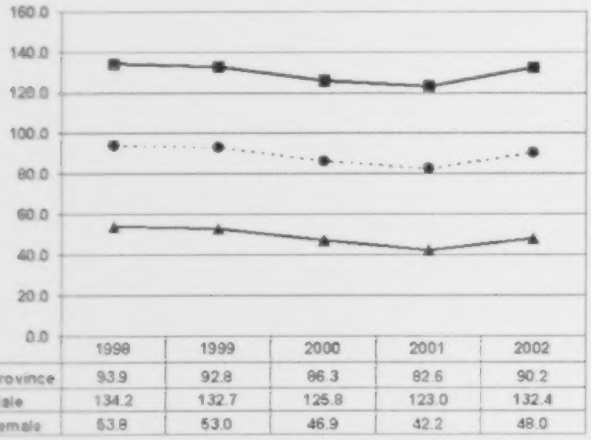

| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alberta | 129.4 | 127.9 | 131.6 | 106.1 | 102.5 | 102.9 | 100.6 | 93.9 | 92.8 | 86.3 | 82.6 | 90.2 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## 5.2 Age and Gender

The rise in NGU/MPC rates noted in 2002 occurred for both males and females. During the five year period (1998-2002) males have consistently shown higher rates of infection than females. (Figure 5.2.1)

**Figure 5.2.1:** Incidence Rates per 100,000 of Reported NGU and MPC for the Province and According to Gender, Alberta, 1998-2002

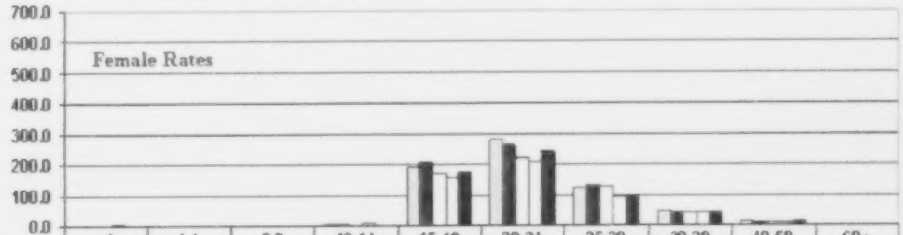



| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Province | 93.9 | 92.8 | 86.3 | 82.6 | 90.2 |
| Male | 134.2 | 132.7 | 125.8 | 123.0 | 132.4 |
| Female | 53.8 | 53.0 | 46.9 | 42.2 | 48.0 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

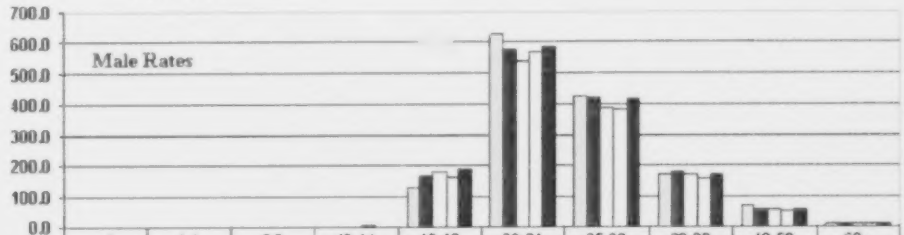
The incidence rate of NGU/MPC varies between age groups for both males and females suggesting that certain age groups are at higher risk of infection. Figures 5.2.2 and 5.2.3 show that since 1998, the 20 – 24 year old age group has had the highest infection rates for both genders. For females, the 15 – 19 year old age group followed with the next highest rate, while for males, it was the older 25 – 29 year old group with the next highest rate. Appendix L shows the *number* of reported MPC and NPU infections by gender and age group. Appendix M shows the *proportion* of those infected by age group during 1998 to 2002.

**Figure 5.2.2:** Incidence Rates per 100,000 of Reported **MPC** for Females by Age Group, Alberta, 1998-2002




| | <1 | 1-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-39 | 40-59 | 60+ |
|---|---|---|---|---|---|---|---|---|---|---|
| □1998 | 0.0 | 0.0 | 0.0 | 2.8 | 192.0 | 278.5 | 123.9 | 48.1 | 11.9 | 1.0 |
| ■1999 | 0.0 | 0.0 | 0.0 | 5.5 | 209.5 | 263.5 | 130.5 | 41.0 | 8.5 | 0.5 |
| □2000 | 0.0 | 0.0 | 0.0 | 0.0 | 170.9 | 223.1 | 125.5 | 45.2 | 8.6 | 0.0 |
| □2001 | 5.5 | 0.0 | 0.0 | 8.1 | 155.0 | 210.1 | 92.7 | 38.9 | 8.3 | 0.0 |
| ■2002 | 0.0 | 0.0 | 0.0 | 0.0 | 175.2 | 241.6 | 99.3 | 45.0 | 11.4 | 0.0 |

**Figure 5.2.3:** Incidence Rates per 100,000 of Reported **NGU** for Males by Age Group, Alberta, 1998-2002



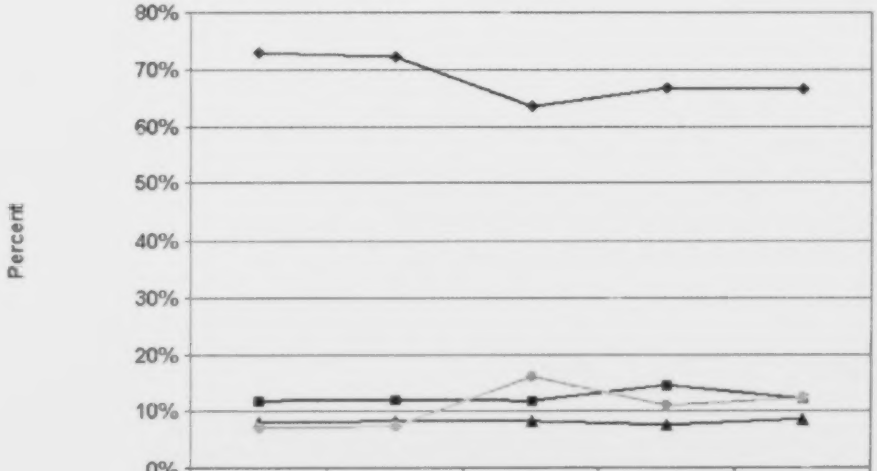

| | <1 | 1-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-39 | 40-59 | 60+ |
|---|---|---|---|---|---|---|---|---|---|---|
| □1998 | 0.0 | 1.2 | 0.0 | 1.8 | 127.1 | 627.0 | 426.5 | 171.0 | 71.2 | 9.7 |
| ■1999 | 0.0 | 1.2 | 0.0 | 0.9 | 169.0 | 578.8 | 420.1 | 181.4 | 56.8 | 10.0 |
| □2000 | 0.0 | 0.0 | 0.0 | 1.7 | 178.7 | 542.1 | 386.8 | 172.7 | 56.5 | 6.5 |
| □2001 | 0.0 | 0.0 | 0.0 | 4.3 | 159.5 | 569.0 | 382.2 | 155.9 | 54.9 | 6.8 |
| ■2002 | 0.0 | 0.0 | 0.9 | 1.7 | 186.8 | 586.5 | 416.8 | 172.9 | 59.2 | 6.6 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## 5.3 Ethnicity

The majority of reported NGU/MPC infections are among those who identify themselves as Caucasian. Aboriginals, who represent approximately five percent of Alberta's population according to the 2001 Canadian Census*, were disproportionately represented during this time period, with 12.2% of reported NGU/MPC infectious in 2002 being in those who identified themselves as Aboriginal.

**Figure 5.3.1:** Proportion of Reported NGU and MPC Infection According to Self-Reported Ethnic Group, by Year – Alberta, 1998-2002




| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Caucasian | 72.8% | 72.1% | 63.5% | 66.8% | 66.6% |
| Aboriginal* | 11.9% | 12.1% | 12.0% | 14.6% | 12.2% |
| Other** | 8.1% | 8.3% | 8.3% | 7.6% | 8.7% |
| Unknown | 7.2% | 7.5% | 16.2% | 11.0% | 12.5% |

* "Aboriginal" includes: First Nations, Metis, Inuit

** "Other" includes individuals identifying themselves as "Black", "Oriental", "Other Asiatic", or "Other"

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

* Statistics Canada. Population by Aboriginal Group, 2001 Census, Canada, provinces, and territories: Aboriginal Identity (8), Age Groups (11B), Sex (3) and Area of Residence (7) for Population, for Canada, Provinces and Territories, 2001 Census - 20% Sample Data. 03 Jul 2003. 03 Feb 2004. <http://www.statcan.ca/english/Pgdb/popula.htm#pop>.

## 5.4 5.4 Geographic Distribution

*Reporting Agency*

In 2002, physicians reported 56% of NGU/MPC infections, with the STD clinics in Calgary, Edmonton, and Ft. McMurray reporting 19%, 20% and 5% respectively. Figure 5.4.1 shows the proportion of cases reported by physicians and clinics and includes a table of the actual number of cases reported by each source.

**Figure 5.4.1:** Proportion of Reported NGU/MPC Infection by Reporting Agency, With Number of Cases Reported, 2000-2001

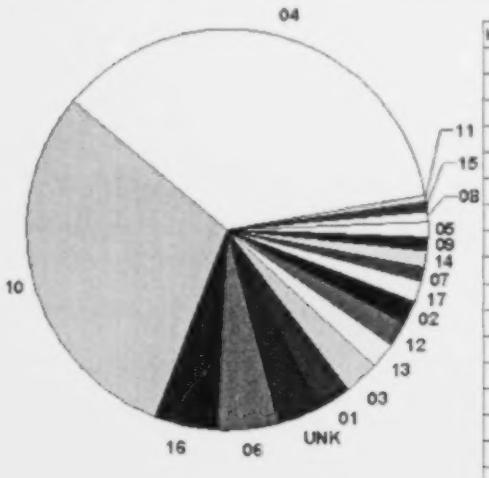
| | 2000 | 2001 | 2002 |
|---|---|---|---|
| Ft. McMurray Clinic | 176 | 173 | 127 |
| Edmonton Clinic | 443 | 420 | 540 |
| Calgary Clinic | 479 | 443 | 557 |
| Physician | 1,483 | 1,460 | 1,559 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003

### *Cases According to Health Region*

The Calgary Regional Health and Capital Health Regional Authorities contributed 36% and 30%, respectively, of all reported cases of NGU/MPC in 2002. The remaining 1/3 of cases were from the remaining fifteen health regions, and included 92 cases for which the health region was identified. High numbers of NGU/MPC cases from regions with large populations, such as Capital and Calgary, is not surprising. Figure 5.4.2 shows the contribution toward the total number of reported NGU/MPC infections in the province by each region during 2002. Appendix N shows the numbers of NGU/MPC cases by region for each of the years 1998 to 2002.

**Figure 5.4.2:** Proportion and Number of Reported NGU/MPC Infections by Health Region in 2002



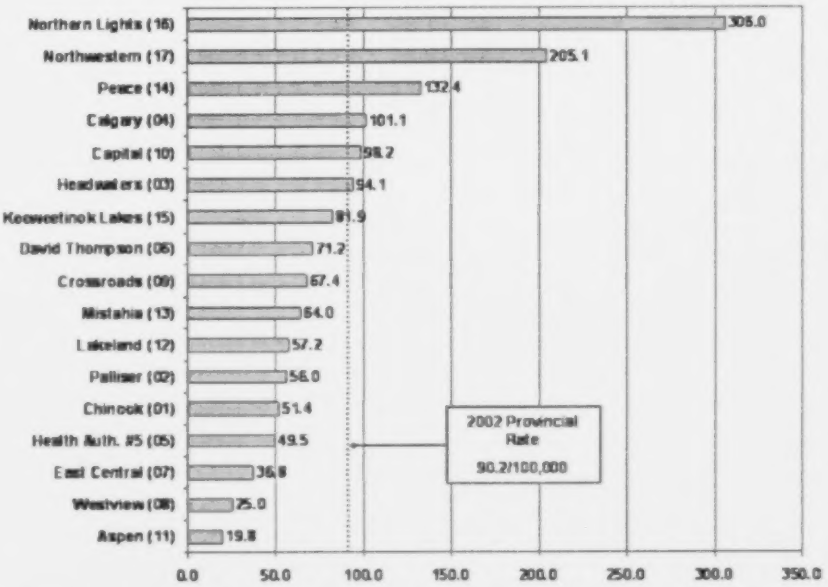

| Health Region | | # of Cases | % of Cases |
|---|---|---|---|
| 11 | Aspen | 19 | 0.7 |
| 15 | Keeweetinok Lakes | 22 | 0.8 |
| 08 | Westview | 24 | 0.9 |
| 05 | Health Auth. #5 | 28 | 1.0 |
| 09 | Crossroads | 33 | 1.2 |
| 14 | Peace | 33 | 1.2 |
| 07 | East Central | 38 | 1.4 |
| 17 | Northwestern | 43 | 1.5 |
| 02 | Palliser | 54 | 1.9 |
| 12 | Lakeland | 57 | 2.0 |
| 13 | Mistahia | 59 | 2.1 |
| 03 | Headwaters | 75 | 2.7 |
| 01 | Chinook | 78 | 2.8 |
| UNK | Unknown | 92 | 3.3 |
| 06 | David Thompson | 138 | 5.0 |
| 16 | Northern Lights | 141 | 5.1 |
| 10 | Capital | 845 | 30.4 |
| 04 | Calgary | 1,004 | 36.1 |
| | Total | 2,783 | 100.0 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

### *Rates According to Health Region*

The overall crude rate of reported NGU/MPC infection in 2002 was 90.2 per 100,000. Rates varied considerably between regions and although Capital and Calgary regions contributed the greatest numbers of cases in the province, the highest rates of reported NGU/MPC were found in the northern part of the province; particularly in the Northern Lights, and Northwestern Regions, with rates per 100,000 of 306.0 and 205.1 respectively. The two regions with the lowest rates per 100,000 were Aspen at 19.8, Westview at 25.0. (Figure 5.4.3) Yearly rates for each of the seventeen health regions are shown in Table 5.4.1.

**Figure 5.4.3:** Rate per 100,000 Population of Reported NGU/MPC Infection by Health Region, Alberta, 2002




Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

**Table 5.4.1:** Rates of Reported NGU/MPC Infection per 100,000 by Health Region, 1998-2002, Ranked from Lowest to Highest Rate in 2002

| Health Region | | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|
| 11 | Aspen | 39.0 | 48.0 | 39.3 | 41.1 | 19.8 |
| 8 | Westview | 30.3 | 24.1 | 15.2 | 17.1 | 25.0 |
| 7 | East Central | 40.5 | 47.4 | 42.4 | 47.0 | 36.8 |
| 5 | Health Auth. #5 | 37.9 | 31.3 | 50.8 | 30.4 | 49.5 |
| 1 | Chinook | 42.3 | 69.2 | 54.5 | 51.6 | 51.4 |
| 2 | Palliser | 34.9 | 47.3 | 62.6 | 53.7 | 55.9 |
| 12 | Lakeland | 53.8 | 66.0 | 58.7 | 67.2 | 57.2 |
| 13 | Mistahia | 59.3 | 38.6 | 45.0 | 58.7 | 64.0 |
| 9 | Crossroads | 70.8 | 65.4 | 66.8 | 68.3 | 67.4 |
| 6 | David Thompson | 122.9 | 92.2 | 82.6 | 71.5 | 71.1 |
| 15 | Keeweetinok Lakes | 120.8 | 65.1 | 87.3 | 74.8 | 81.9 |
| 3 | Headwaters | 113.5 | 128.4 | 114.4 | 105.1 | 94.1 |
| 10 | Capital | 107.0 | 90.2 | 84.8 | 79.3 | 98.2 |
| 4 | Calgary | 101.1 | 107.4 | 92.5 | 85.1 | 101.1 |
| 14 | Peace | 52.1 | 95.2 | 119.6 | 141.1 | 132.4 |
| 17 | Northwestern | 257.4 | 186.2 | 276.5 | 279.7 | 205.1 |
| 16 | Northern Lights | 329.1 | 448.6 | 445.3 | 440.8 | 306.0 |
| Annual Provincial Rate | | **93.9** | **92.8** | **86.3** | **82.6** | **90.2** |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

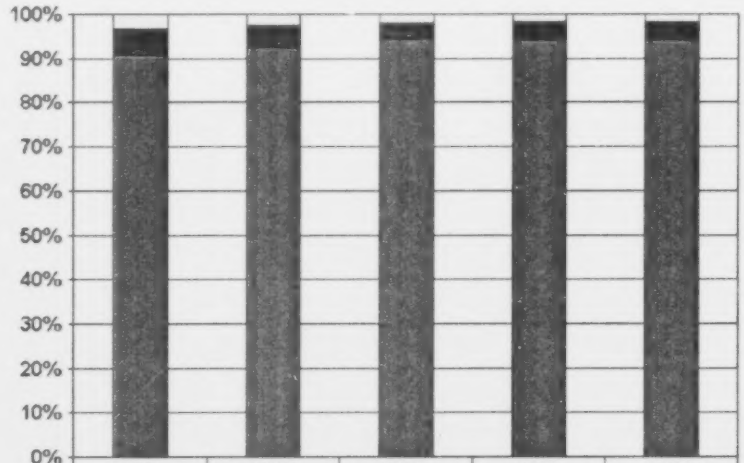
## 5.5 Treatment

In 1998, Alberta Health and Wellness released *Treatment Guidelines for Sexually Transmitted Diseases* describing the recommended antibiotic regimens for treating NGU and MPC infections in adolescents and adults. In general, azithromycin is the primary recommended antibiotic, with doxycycline or erythromycin recommended as alternative antibiotics.

The *Treatment Guidelines* include important considerations for treating NGU and MPC infections and are an important resource in delivering effective treatment. In 2003, revisions to the 1998 *Guidelines* were completed and Alberta Health and Wellness published the *"Alberta Treatment Guidelines: Sexually Transmitted Infections in Adolescents and Adults"*. Copies of this more recent publication are available from the Data Fivepark Warehouse by faxing (403) 272-7774.

Ninety-eight percent of the antibiotics used to treat NGU and MPC in 2002 were one of the two antibiotics (azithromycin and doxycycline) recommended by the *Treatment Guidelines (1998)*. Of these, azithromycin was the most commonly used. (Figure 5.5.1)

**Figure 5.5.1:** Proportion and Number of Reported NGU and MPC Infections Treated with Azithromycin, Doxycycline, and Other Antibiotics




| | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| □Other Drugs | 3.3% | 2.5% | 2.2% | 1.6% | 1.6% |
| ■Doxycycline | 6.2% | 5.0% | 3.5% | 4.3% | 4.5% |
| ■Azithromycin | 90.5% | 92.5% | 94.3% | 94.1% | 93.9% |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## 5.6 Summary

- NGU/MPC infections are the second common notifiable STI in Alberta.
- Slightly over half of the NGU/MPC infections are reported through physician offices, with the remainder being reported by the province's three STD Clinics.
- Following a decline in combined NGU/MPC rates from 1993, a slight rise was noted for both males (NGU) and females (MPC) in 2002.
- Throughout 1998 to 2002, rates of NGU in males were higher than rates of MPC in females. The 20 – 24 year old age group was the group with the highest rates for both males and females.
- Regional variations in rates of NGU/MPC infection exist; with two northern regions having over twice the provincial rate in 2002.
- The proportion of NGU/MPC infection according to ethnicity remained constant with the majority of those affected identifying themselves as Caucasian. However, Aboriginals are disproportionately affected by NGU/MPC infection.
- Nearly all of the reported NGU/MPC cases are treated with either azithromycin or doxycycline as recommended by the province for treatment of these infections.

# 6 Chancroid & Lymphogranuloma Venereum

**Chancroid**

Chancroid is most commonly seen in developing countries and is rare in Canada. It is caused by a bacterium called *Haemophilus ducreyi* and is spread through direct sexual contact with an infected individual. Symptoms begin with a small, red papule that develops anywhere from three days to one month after exposure. The papule progresses to a painful ulcer that may bleed and drain grey or yellowish pus. Lymphadenitis may develop and an affected lymph node may also open to form an ulcer. Treatment with appropriate antibiotics will cure chancroid infection but scarring caused by chancroid ulcers may require surgical correction.[21]

**Lymphgranuloma Venereum**

Lymphgranuloma venereum (LGV) is most common in tropical and subtropical countries and is rare in Canada. It is spread through sexual contact and is caused by a subtype of *Chlamydia trachomatis* affecting the genital area and the lymphatic system. There are three stages to this infection: 1) incubation – after four to thirty days a painless ulcer or blister will occur; 2) lymphatic involvement - one to six weeks later "buboes", or swelling of lymph nodes occurs and nodes may rupture and form fistulas, fever rash, headache, nausea may also occur; 3) anogenitorectal syndrome – may include rectal pain, constipation, pus or bloody discharge and strictures, resulting in narrowing of the rectum or vagina. In early stages LGV may go unnoticed and can result in serious complications such as infertility, abscesses, and complication of blockages to the lymph system. Treatment with appropriate antibiotics will cure LGV, but surgery may be required to correct complications that occur during the second and third stages of infection.[22]

## 6.1 Incidence - Alberta

Although both chancroid and lymphogranuloma venereum (LGV) are rare in Canada, they remain notifiable infections. There have been no recent cases of chancroid or LGV infection reported in Alberta. However, with increasing travel, and with many Albertans working abroad, surveillance for chancroid and LGV will help inform the STI program if the importation of these infections should occur.

During the 1980s and 1990s there were a few chancroid infections reported in Alberta. In general these could be linked with travel, or contact with a person who had traveled to an endemic region. There have been no cases of LGV infection reported during this time period (1981-2002). (Table 6.1)

**Table 6.1:** Reported Chancroid Infection by Year, Alberta, 1981-2002

| Year | # | Year | # | Year | # |
|---|---|---|---|---|---|
| 1981 | 0 | 1991 | 0 | 2001 | 0 |
| 1982 | 0 | 1992 | 1 | 2002 | 0 |
| 1983 | 0 | 1993 | 0 | | |
| 1984 | 1 | 1994 | 0 | | |
| 1985 | 1 | 1995 | 1 | | |
| 1986 | 1 | 1996 | 0 | | |
| 1987 | 3 | 1997 | 0 | | |
| 1988 | 3 | 1998 | 0 | | |
| 1989 | 0 | 1999 | 0 | | |
| 1990 | 0 | 2000 | 0 | | |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness. *STD Database (1996-2002)*, June 2003.

## 6.2 Summary

- Lymphogranuloma venereum (LGV) and chancroid infection are rare in Canada.
- During the 1980s, there were 9 cases of chancroid reported in Alberta. There were 2 cases of chancroid reported in Alberta during the 1990s.
- Since 1981, there have been no reported cases of LGV in Alberta. There have been no reported cases of chancroid infection since 1995.
- Cases of chancroid in Alberta have been linked with travel, or contact with a person who had traveled to an endemic region.

# 7 Pelvic Inflammatory Disease (PID)

**Description**

Pelvic Inflammatory Disease (PID) is the most common complication of undetected or untreated sexually transmitted infections in females. PID is an inflammation of the internal female genital organs such as the uterus (womb), ovaries, fallopian tubes, or cervix and is a major cause of ectopic pregnancy and infertility. It is estimated that 75-85% of PID is caused by STI.[23] In 1993, it was estimated that 30-50% of PID in Canada was attributable to one, or both, of these two organisms.[24]

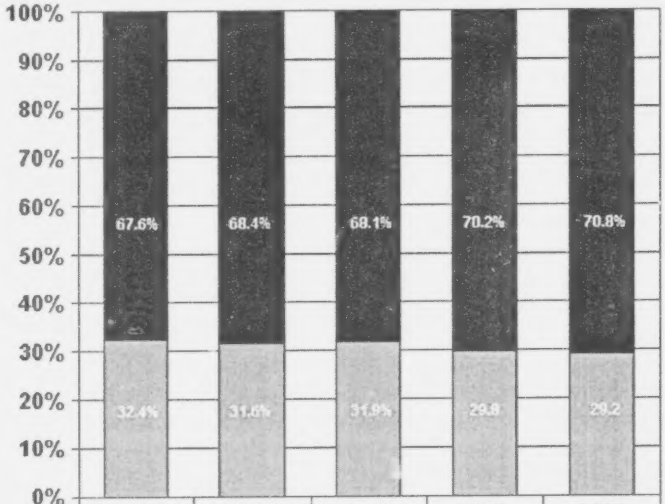
## 7.1 National

In Canada, PID is not a reportable disease. Therefore, the national incidence of PID is unknown. In the absence of reported figures, extracting the number of PID cases from hospital discharge abstract data has been used to help provide an estimate of incidence. However, this likely underestimates the actual incidence, as it only reflects cases severe enough to require hospitalization. Costs of treating PID through hospitalization and/or outpatient care can be estimated from hospital morbidity data and, in 1984/85, costs were estimated at more than 140 million dollars (ICD9-CM = 614 only).[25] Again, this may be an "underestimate" since such things as "investigation of chronic pelvic pain", a symptom of PID, were not included.

## 7.2 Alberta

In Alberta, PID is not a reportable disease. However, hospital discharge abstract for Alberta provides some information on PID in the province. Figure 7.2.1 shows the proportion of hospital admissions in Alberta, during 1997 to 2001, with PID as either the primary or secondary diagnosis. The total hospitalized cases with PID in 1997 were 3,196. By 2000 and 2001, the number of hospital admissions had declined by over 500 with a total of 2,634 and 2,660 admissions in each of these two years. The reason(s) for the decline in PID related hospital admissions is not known. One possible explanation could be that PID, as a complication of STI, has decreased as a result of early diagnosis and treatment. The extent to which this has happened, if at all, is impossible to determine as declining PID admissions will also reflect the shift in management of PID from in-patient to out-patient settings.

**Figure 7.2.1:** Proportion and Numbers of Hospitalizations for PID in Alberta Where PID is Identified as "Primary" or "Secondary" Diagnosis, According to ICD9-CM 614, 1997-2001




| | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|
| Secondary Diagnosis | 2,159 | 2,002 | 1,896 | 1,849 | 1,882 |
| Primary Diagnosis | 1,037 | 923 | 890 | 785 | 778 |

Source: Discharge Abstract Database, Hospital Morbidity Database, Canadian Institute of Health Information, 1997-2001.

## 7.3 Summary

- Hospital discharge abstract data shows that hospital admissions for PID have declined in recent years.
- Reasons for the decline in PID admissions could include: 1) early diagnosis and treatment of STI; and/or 2) a shift in management of PID from in-patient to out-patient settings.

# 8 Partner Notification

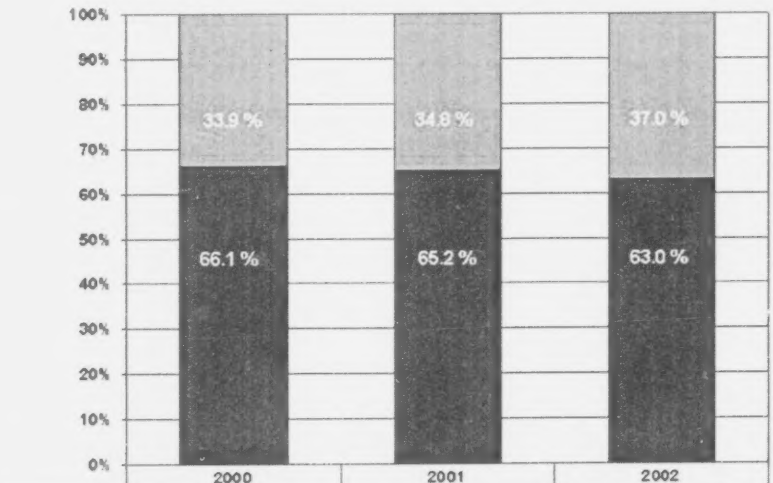
**Description**

Partner notification is an effective strategy to control and prevent the transmission of sexually transmitted infections (STI). This strategy helps find, and ultimately treat, unidentified STI cases by locating, contacting and notifying sexual partners of people with STI. The partner notification process is initiated by the physician or clinic when a laboratory result confirming STI is received. Upon receiving confirmation, the physician or clinic will ask the infected individual to provide demographic information on all of his or her sexual partners during the infectious period. Regional health nurses in charge of STI partner notification will then attempt to contact the identified sexual partners and will recommend that they be tested for STI. An attempt is made to reach all sexual partners. However, in reality, not all sexual partners are reported and locating all of those who are reported is not always possible.

## 8.1 Alberta

Over the past three years, the proportion of partners that are successfully located (traceable) has declined slightly from 66.1% in 2000 to 63.0% in 2002. (Figure 8.1.1)

**Figure 8.1.1:** Proportion and Numbers of Reported Sexual Partners of STI Cases that are "Traceable" - Alberta, 2000-2002

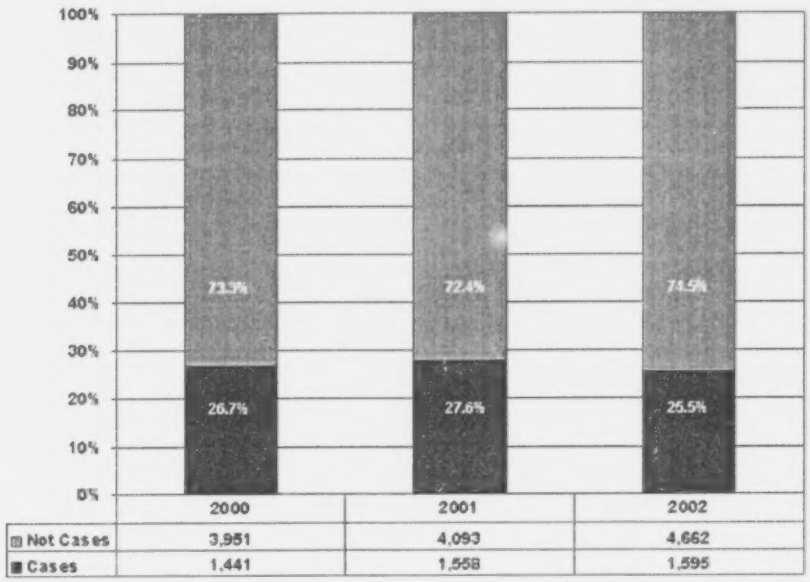



| | 2000 | 2001 | 2002 |
|---|---|---|---|
| Untraceable | 2,762 | 3,022 | 3,667 |
| Traceable | 5,392 | 5,651 | 6,257 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*.

Of the partners successfully located and tested, slightly over one quarter were found to have an STI. (Figure 8.1.2)

**Figure 8.1.2:** Proportion and Numbers of Traceable Sexual Partners of STI Cases that are found to be Positive for STI - Alberta, 2000-2002

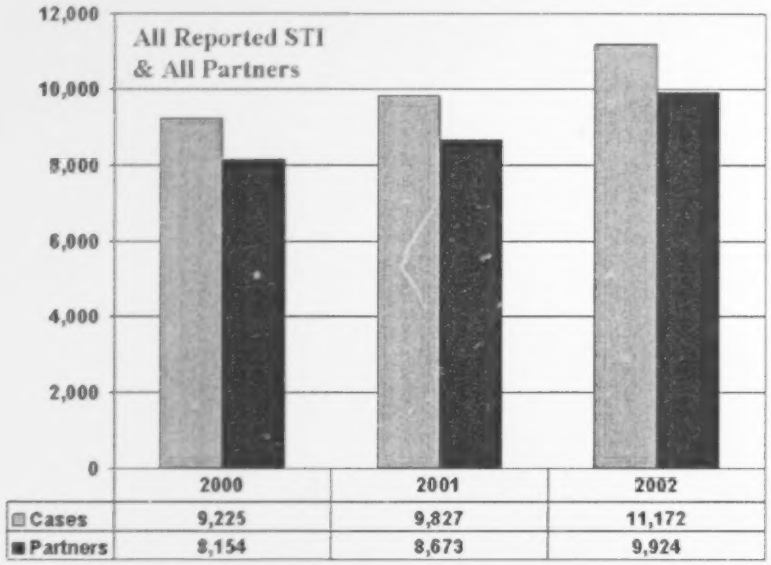



Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*

## 8.2 Numbers of Partners

Locating and treating identified partners is an important strategy to reduce the spread of STI and prevent complications associated with untreated STI. Partner notification nurses follow-up on all identified partners that are forwarded through clinics and physician offices. During 2000 to 2002, the total number of identified partners in relation to the total number of reported STI, was less than one partner per case. These few partners could be related to: 1) individuals might be co-infected with more than one STI, so would have been reported more than once; 2) inconsistent methods of reporting of partners for entry into the STI database; and/or 3) differences in obtaining partner information between physician offices and clinics. With close to 75% of all STI being reported through physician offices, it is important that each of these offices actively engage in identifying partners. Figure 8.2.1 shows the number of cases and the number of partners (regardless of reporting agency).

**Figure 8.2.1:** Number of Reported STI and Number of Partners - Alberta, 2000-2002




| | 2000 | 2001 | 2002 |
|---|---|---|---|
| Cases | 9,225 | 9,827 | 11,172 |
| Partners | 8,154 | 8,673 | 9,924 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*

## 8.3 Summary

- Finding and treating infected partners is an important strategy in helping to reduce the spread of STI and to prevent complications associated with untreated STI.
- Close to 63% of partners are located and of these, close to one quarter are found to have STI and require treatment.
- The proportion of partners to cases is difficult to determine because some individuals are infected with more than one STI and there may be under-reporting of partner information.
- Differences in obtaining partner information may exist between physician's offices and clinics.

# 9 STD/HIV Toll-Free Information Line

**Background**

In 1987, Alberta Health and Wellness established a confidential and anonymous toll-free telephone line to provide the public with accurate information on HIV/AIDS. In 1990, this service was expanded to include information related to sexually transmitted infections. Alberta Health and Wellness operated this service until November 1997, when the continued operation of this line as a provincial resource, was divested to the Capital Health region.

This toll-free telephone information line is computer-answered and is available twenty-four hours a day. It includes recorded messages about STI and HIV that can be played by the caller selecting the appropriate number on a touch-tone phone. If callers would like to speak directly to a health care professional, they can press zero on their phone during business hours Monday to Friday, to be connected with an STI experienced registered nurse.

The telephone number to reach this service is included in all of Alberta's telephone books.
The number is: 1-800-772-2437.

## 9.1 Usage

During 1998 to 2002, the number of computer-answered calls to the toll-free line ranged between 14,955 and 23,400 calls per year. The 14,955 computer-answered calls in 2002 were at the lowest number answered since 1990, and were less than half the number of computer answered calls recorded during 1992, when the number of calls peaked at 33,418. This decline equates to a drop from an average of 92 calls per day in 1992 to an average of 41 calls per day in 2002.

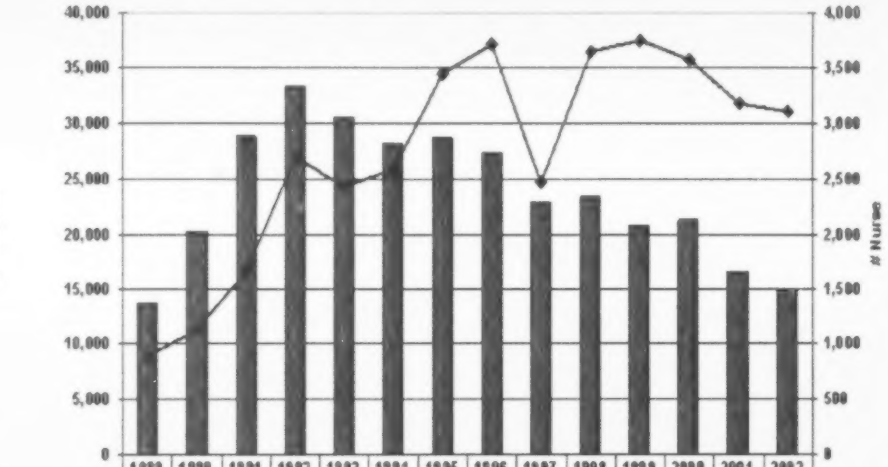
Except for 1997*, the number of nurse answered calls has remained over 3000 per year since 1995. The number of calls peaked in 1999 at 3,750 and declined slightly in 2002 to 3,108. This equates to an average of 15 calls per weekday during 1999 and an average of 12 calls per weekday in 2002.

The majority of nurse-answered calls during each of the years 1998 to 2002 were regarding STI. During this time period, the proportion of calls related to HIV declined, while the proportion of calls related to STI increased from 62% in 1998 to 76% in 2002.

Figure 9.1.1 depicts the actual numbers of computer and nurse-answered calls for each year from 1989 to 2002, and Figure 9.1.2 shows the number of nurse-answered calls according to topic.

* The decline in nurse-answered calls in 1997 was a result of the nurse-answered feature not being operational for approximately a four month period. This occurred during the transfer of STD Services from Alberta Health and Wellness to Capital Health.

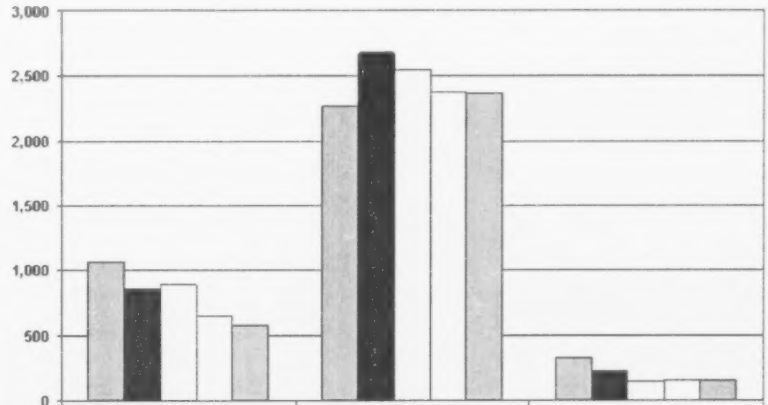
**Figure 9.1.1:** Number of Computer Answered and Nurse-Answered Telephone Calls to HIV and STI Toll-Free Information Line, Alberta, 1989-2002




| | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Computer | 13,692 | 20,181 | 28,843 | 33,418 | 30,645 | 28,256 | 28,672 | 27,392 | 22,861 | 23,400 | 20,748 | 21,289 | 16,624 | 14,955 |
| Nurse | 896 | 1,128 | 1,669 | 2,695 | 2,424 | 2,586 | 3,451 | 3,718 | 2,469 | 3,648 | 3,758 | 3,576 | 3,188 | 3,108 |

Source: Alberta Health and Wellness, Population Health Branch, and, Capital Health, STD Centre

**Figure 9.1.2:** Number of Nurse-Answered Calls to the HIV and STI Toll-Free Information Line, by Topic, Alberta, 1998-2002




| | HIV | STD | Other |
|---|---|---|---|
| 1998 | 1,063 | 2,265 | 320 |
| 1999 | 852 | 2,675 | 223 |
| 2000 | 889 | 2,541 | 146 |
| 2001 | 655 | 2,379 | 154 |
| 2002 | 581 | 2,365 | 154 |

Source: Alberta Health and Wellness, Population Health Branch, and, Capital Health, STD Centre.

## 9.2 Summary

- The STD/HIV information line provides an important source of accurate information regarding STI to all Albertans and allows the opportunity to speak to a registered nurse.
- The number of computer-answered calls has declined in recent years, but computer-answered calls outnumber nurse-answered calls by nearly five times. The computer-answered feature is available 24 hours per day, every day of the year.
- Nurse-answered calls remain popular with over 3000 calls per year during 1998-2002. This feature is available during weekdays only.
- The toll-free telephone number is included in all of Alberta's telephone books and is: 1-800-772-2437.

## Appendix A

Seventeen Regional Health Authorities – Alberta, 2002
Northwestern RHA17
Peace RHA14
Northern Lights RHA16
Keeweetinok Lakes RHA15
Mistahia RHA13
Aspen RHA11
Lakeland RHA 12
Westview RHA8
Capital RHA10
Crossroads RHA9
East Central RHA7
David Thompson RHA6
Health Authority #5 RHA5
Calgary RHA4
ALBERTA
Headwaters RHA3
Palliser RHA2
Chinook RHA1
Source: Health Surveillance, Alberta Health and Wellness, 13 March 2001

## Appendix B

### Number of Reported Chlamydia Infections by Gender and Age Group, Alberta, 1998-2002

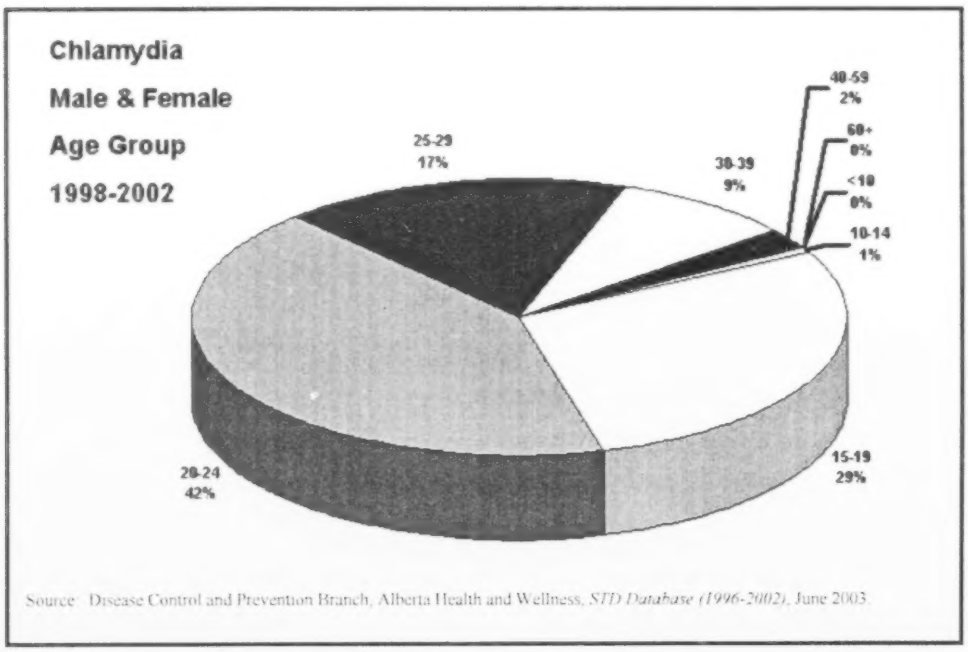
| Female | 1998 | 1999 | 2000 | 2001 | 2002 | Total |
|---|---|---|---|---|---|---|
| <1 | 1 | 0 | 0 | 4 | 4 | 9 |
| 1-4 | 3 | 1 | 0 | 1 | 0 | 5 |
| 5-9 | 1 | 0 | 0 | 0 | 0 | 1 |
| 10-14 | 12 | 14 | 30 | 40 | 75 | 171 |
| 15-19 | 1,008 | 1,407 | 1,474 | 1,671 | 1,974 | 7,534 |
| 20-24 | 1,868 | 1,616 | 1,874 | 1,813 | 2,022 | 9,193 |
| 25-29 | 666 | 586 | 577 | 645 | 658 | 3,132 |
| 30-39 | 273 | 262 | 283 | 288 | 319 | 1,425 |
| 40-59 | 38 | 54 | 60 | 61 | 56 | 269 |
| 60+ | 0 | 1 | 3 | 0 | 0 | 4 |
| Total | 3,870 | 3,941 | 4,301 | 4,523 | 5,108 | 21,743 |

| Male | 1998 | 1999 | 2000 | 2001 | 2002 | Total |
|---|---|---|---|---|---|---|
| <1 | 0 | 2 | 5 | 0 | 1 | 8 |
| 1-4 | 6 | 0 | 0 | 0 | 0 | 6 |
| 5-9 | 2 | 1 | 0 | 0 | 0 | 3 |
| 10-14 | 0 | 2 | 0 | 2 | 3 | 7 |
| 15-19 | 144 | 183 | 221 | 313 | 336 | 1,197 |
| 20-24 | 573 | 641 | 703 | 807 | 969 | 3,693 |
| 25-29 | 358 | 360 | 444 | 442 | 514 | 2,118 |
| 30-39 | 217 | 195 | 247 | 293 | 297 | 1,249 |
| 40-59 | 78 | 82 | 97 | 98 | 119 | 474 |
| 60+ | 3 | 7 | 5 | 7 | 5 | 27 |
| unk | 1 | 0 | 1 | 0 | 0 | 2 |
| Total | 1,382 | 1,473 | 1,723 | 1,962 | 2,244 | 8,784 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## Appendix C

### Proportion of Reported Chlamydia Infections by Age Group, Alberta, 1998-2002




Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## Appendix D

### Number of Reported Chlamydia Infections by Health Region, Alberta, 1998-2002

| Health Region | | 1998 | 1999 | 2000 | 2001 | 2002 | 5 Year Total |
|---|---|---|---|---|---|---|---|
| 1 | Chinook | 225 | 253 | 245 | 242 | 239 | 1,204 |
| 2 | Palliser | 147 | 156 | 161 | 168 | 174 | 806 |
| 3 | Headwaters | 139 | 112 | 104 | 133 | 134 | 622 |
| 4 | Calgary | 1,601 | 1,615 | 1,816 | 1,891 | 2,278 | 9,201 |
| 5 | Health Auth. #5 | 43 | 39 | 51 | 52 | 71 | 256 |
| 6 | David Thompson | 426 | 415 | 406 | 386 | 504 | 2,137 |
| 7 | East Central | 93 | 74 | 81 | 119 | 121 | 488 |
| 8 | Westview | 99 | 89 | 96 | 136 | 167 | 587 |
| 9 | Crossroads | 133 | 127 | 134 | 116 | 154 | 664 |
| 10 | Capital | 1,487 | 1,718 | 1,840 | 2,084 | 2,326 | 9,455 |
| 11 | Aspen | 74 | 75 | 99 | 85 | 100 | 433 |
| 12 | Lakeland | 168 | 147 | 163 | 168 | 228 | 874 |
| 13 | Mistahia | 202 | 194 | 333 | 334 | 281 | 1,344 |
| 14 | Peace | 55 | 69 | 106 | 97 | 86 | 413 |
| 15 | Keeweetinok Lakes | 110 | 80 | 100 | 120 | 109 | 519 |
| 16 | Northern Lights | 124 | 121 | 154 | 175 | 187 | 761 |
| 17 | Northwestern | 83 | 102 | 103 | 105 | 126 | 519 |
| | Unknown | 43 | 28 | 32 | 74 | 67 | 244 |
| Total - Province | | 5,252 | 5,414 | 6,024 | 6,485 | 7,352 | 30,527 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## Appendix E

### Number of Reported Gonorrhea Infections by Gender and Age Group, Alberta, 1998-2002

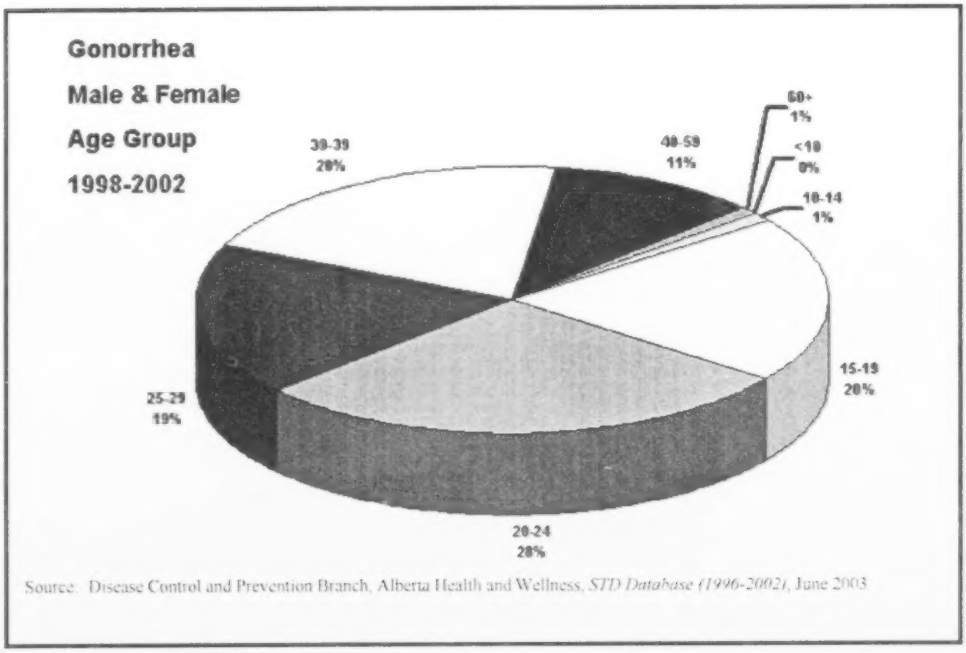
| Female | 1998 | 1999 | 2000 | 2001 | 2002 | Total |
|---|---|---|---|---|---|---|
| 5-9 | 0 | 0 | 1 | 0 | 1 | 2 |
| 10-14 | 5 | 1 | 0 | 5 | 14 | 25 |
| 15-19 | 99 | 87 | 71 | 115 | 147 | 519 |
| 20-24 | 88 | 86 | 78 | 117 | 130 | 499 |
| 25-29 | 34 | 38 | 54 | 45 | 52 | 223 |
| 30-39 | 18 | 26 | 32 | 28 | 51 | 155 |
| 40-59 | 10 | 10 | 6 | 12 | 19 | 57 |
| 60+ | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 255 | 248 | 242 | 322 | 414 | 1,481 |

| Male | 1998 | 1999 | 2000 | 2001 | 2002 | Total |
|---|---|---|---|---|---|---|
| 5-9 | 2 | 0 | 0 | 0 | 0 | 2 |
| 10-14 | 1 | 1 | 0 | 0 | 4 | 6 |
| 15-19 | 22 | 22 | 28 | 41 | 63 | 176 |
| 20-24 | 66 | 76 | 63 | 122 | 137 | 464 |
| 25-29 | 58 | 62 | 73 | 102 | 116 | 411 |
| 30-39 | 77 | 90 | 117 | 120 | 141 | 545 |
| 40-59 | 44 | 34 | 60 | 75 | 95 | 308 |
| 60+ | 3 | 2 | 3 | 10 | 11 | 29 |
| Total | 273 | 287 | 344 | 470 | 567 | 1,941 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## Appendix F

### Proportion of Reported Gonorrhea Infections by Age Group, Alberta, 1998-2002




Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003

## Appendix G

### Number of Reported Gonorrhea Infections by Health Region, Alberta, 1998-2002

| Health Region | | 1998 | 1999 | 2000 | 2001 | 2002 | 5 Year Total |
|---|---|---|---|---|---|---|---|
| 01 | Chinook | 10 | 16 | 10 | 9 | 11 | 56 |
| 02 | Palliser | 5 | 8 | 3 | 11 | 3 | 30 |
| 03 | Headwaters | 2 | 6 | 3 | 2 | 6 | 19 |
| 04 | Calgary | 195 | 141 | 152 | 186 | 252 | 926 |
| 05 | Health Auth. #5 | 2 | 3 | 1 | 6 | 2 | 14 |
| 06 | David Thompson | 18 | 19 | 18 | 19 | 12 | 86 |
| 07 | East Central | 1 | 0 | 4 | 4 | 4 | 13 |
| 08 | Westview | 1 | 5 | 6 | 8 | 12 | 32 |
| 09 | Crossroads | 14 | 14 | 22 | 26 | 18 | 94 |
| 10 | Capital | 187 | 251 | 253 | 405 | 500 | 1,596 |
| 11 | Aspen | 4 | 0 | 6 | 3 | 6 | 19 |
| 12 | Lakeland | 14 | 20 | 15 | 25 | 59 | 133 |
| 13 | Mistahia | 10 | 5 | 5 | 19 | 22 | 61 |
| 14 | Peace | 4 | 4 | 8 | 3 | 13 | 32 |
| 15 | Keeweetinok Lakes | 12 | 9 | 12 | 14 | 16 | 63 |
| 16 | Northern Lights | 7 | 12 | 5 | 16 | 17 | 57 |
| 17 | Northwestern | 3 | 19 | 60 | 32 | 26 | 140 |
| | Unknown | 39 | 3 | 3 | 4 | 2 | 51 |
| Total - Province | | 528 | 535 | 586 | 792 | 981 | 3,422 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## Appendix H

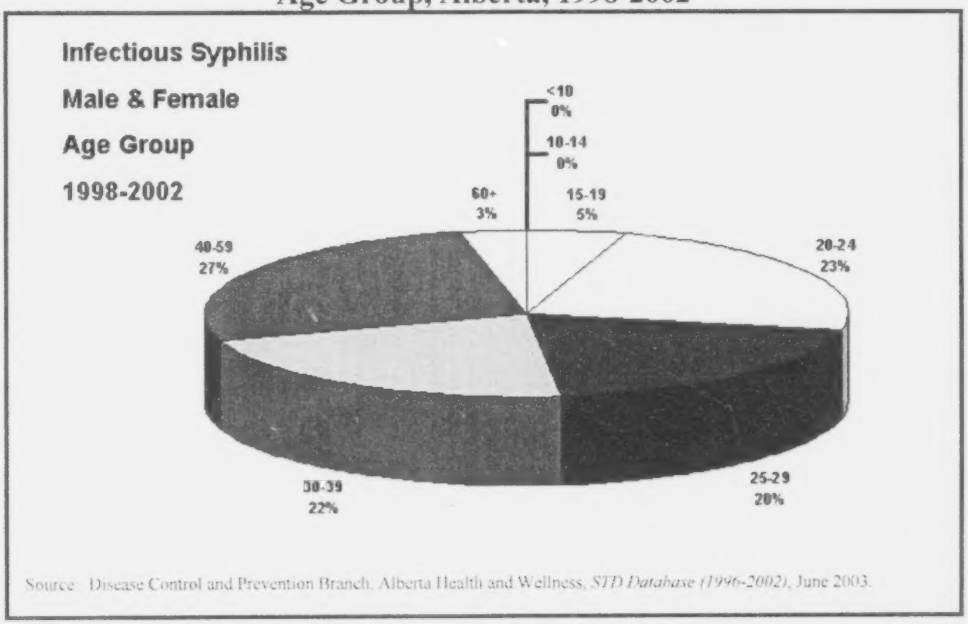
### Numbers of Reported Infectious Syphilis by Gender and Age Group, Alberta, 1998-2002

| Female | 1998 | 1999 | 2000 | 2001 | 2002 | Total |
|---|---|---|---|---|---|---|
| <10 | 0 | 0 | 0 | 0 | 0 | **0** |
| 10-14 | 0 | 0 | 0 | 0 | 0 | **0** |
| 15-19 | 0 | 0 | 0 | 2 | 0 | **2** |
| 20-24 | 0 | 0 | 0 | 5 | 3 | **8** |
| 25-29 | 0 | 0 | 0 | 0 | 1 | **1** |
| 30-39 | 0 | 0 | 1 | 0 | 0 | **1** |
| 40-59 | 0 | 0 | 1 | 1 | 1 | **3** |
| 60+ | 0 | 0 | 0 | 0 | 0 | **0** |
| **Total** | **0** | **0** | **2** | **8** | **5** | **15** |

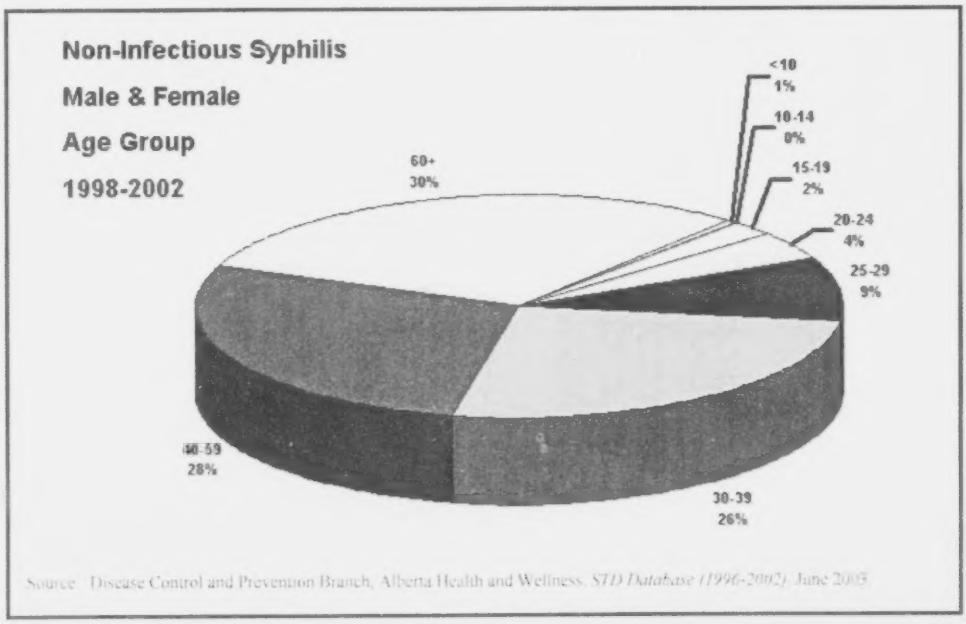
| Male | 1998 | 1999 | 2000 | 2001 | 2002 | Total |
|---|---|---|---|---|---|---|
| <10 | 0 | 0 | 0 | 0 | 0 | **0** |
| 10-14 | 0 | 0 | 0 | 0 | 0 | **0** |
| 15-19 | 0 | 0 | 0 | 0 | 1 | **1** |
| 20-24 | 0 | 0 | 0 | 4 | 2 | **6** |
| 25-29 | 2 | 0 | 4 | 3 | 2 | **11** |
| 30-39 | 2 | 0 | 7 | 2 | 1 | **12** |
| 40-59 | 2 | 2 | 1 | 5 | 3 | **13** |
| 60+ | 0 | 0 | 1 | 1 | 0 | **2** |
| **Total** | **6** | **2** | **13** | **15** | **9** | **45** |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## Proportion of Reported Infectious and Non-Infectious Syphilis by Age Group, Alberta, 1998-2002




Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.




Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## Appendix J

### Numbers of Reported Non-Infectious Syphilis by Gender and Age Group, Alberta, 1998-2002

| Female | 1998 | 1999 | 2000 | 2001 | 2002 | Total |
|---|---|---|---|---|---|---|
| <10 | 0 | 0 | 0 | 0 | 1 | 1 |
| 10-14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15-19 | 0 | 0 | 0 | 1 | 2 | 3 |
| 20-24 | 2 | 0 | 2 | 1 | 1 | 6 |
| 25-29 | 1 | 2 | 1 | 1 | 2 | 7 |
| 30-39 | 7 | 5 | 5 | 3 | 2 | 22 |
| 40-59 | 5 | 3 | 1 | 1 | 8 | 18 |
| 60+ | 8 | 5 | 8 | 6 | 4 | 31 |
| Total | 23 | 15 | 17 | 13 | 20 | 88 |

| Male | 1998 | 1999 | 2000 | 2001 | 2002 | Total |
|---|---|---|---|---|---|---|
| <10 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10-14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15-19 | 0 | 0 | 0 | 1 | 0 | 1 |
| 20-24 | 1 | 1 | 0 | 0 | 0 | 2 |
| 25-29 | 1 | 5 | 1 | 1 | 2 | 10 |
| 30-39 | 2 | 6 | 7 | 3 | 9 | 27 |
| 40-59 | 7 | 6 | 7 | 8 | 6 | 34 |
| 60+ | 3 | 5 | 7 | 5 | 5 | 25 |
| Total | 14 | 23 | 22 | 18 | 22 | 99 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## Appendix K

# Numbers of Reported Infectious and Non-Infectious Syphilis by Health Region, Alberta, 1998-2002

Number of Reported Infectious Syphilis Infections by Health Region for Five Years, Alberta, 1998-2002

| Health Region | | 1998 | 1999 | 2000 | 2001 | 2002 | 5 Year Total |
|---|---|---|---|---|---|---|---|
| 1 | Chinook | 0 | 0 | 0 | 1 | 3 | 4 |
| 2 | Palliser | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | Headwaters | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | Calgary | 5 | 2 | 13 | 17 | 8 | 45 |
| 5 | Health Auth. #5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | David Thompson | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | East Central | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | Westview | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | Crossroads | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | Capital | 1 | 0 | 2 | 4 | 3 | 10 |
| 11 | Aspen | 0 | 0 | 0 | 1 | 0 | 1 |
| 12 | Lakeland | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | Mistahia | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | Peace | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | Keeweetinok Lakes | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | Northern Lights | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | Northwestern | 0 | 0 | 0 | 0 | 0 | 0 |
| Total - Province | | 6 | 2 | 15 | 23 | 14 | 60 |

Number of Reported Non-Infectious Syphilis Infections by Health Region for Five Years, Alberta, 1998-2002

| Health Region | | 1998 | 1999 | 2000 | 2001 | 2002 | 5 Year Total |
|---|---|---|---|---|---|---|---|
| 1 | Chinook | 0 | 1 | 1 | 0 | 0 | 2 |
| 2 | Palliser | 0 | 0 | 0 | 1 | 1 | 2 |
| 3 | Headwaters | 1 | 0 | 0 | 0 | 0 | 1 |
| 4 | Calgary | 20 | 20 | 24 | 22 | 22 | 111 |
| 5 | Health Auth. #5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | David Thompson | 1 | 0 | 0 | 1 | 2 | 4 |
| 7 | East Central | 0 | 1 | 1 | 0 | 1 | 3 |
| 8 | Westview | 1 | 0 | 0 | 0 | 0 | 1 |
| 9 | Crossroads | 0 | 1 | 0 | 0 | 0 | 1 |
| 10 | Capital | 10 | 14 | 13 | 6 | 14 | 57 |
| 11 | Aspen | 0 | 0 | 0 | 1 | 0 | 1 |
| 12 | Lakeland | 0 | 1 | 0 | 0 | 1 | 2 |
| 13 | Mistahia | 1 | 0 | 0 | 0 | 0 | 1 |
| 14 | Peace | 0 | 0 | 0 | 0 | 1 | 1 |
| 15 | Keeweetinok Lakes | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | Northern Lights | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | Northwestern | 0 | 0 | 0 | 0 | 0 | 0 |
| Total - Province | | 37 | 38 | 39 | 31 | 42 | 187 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## Appendix L

### Number of Reported NGU and MPC Infections by Gender and Age Group, Alberta, 1998-2002

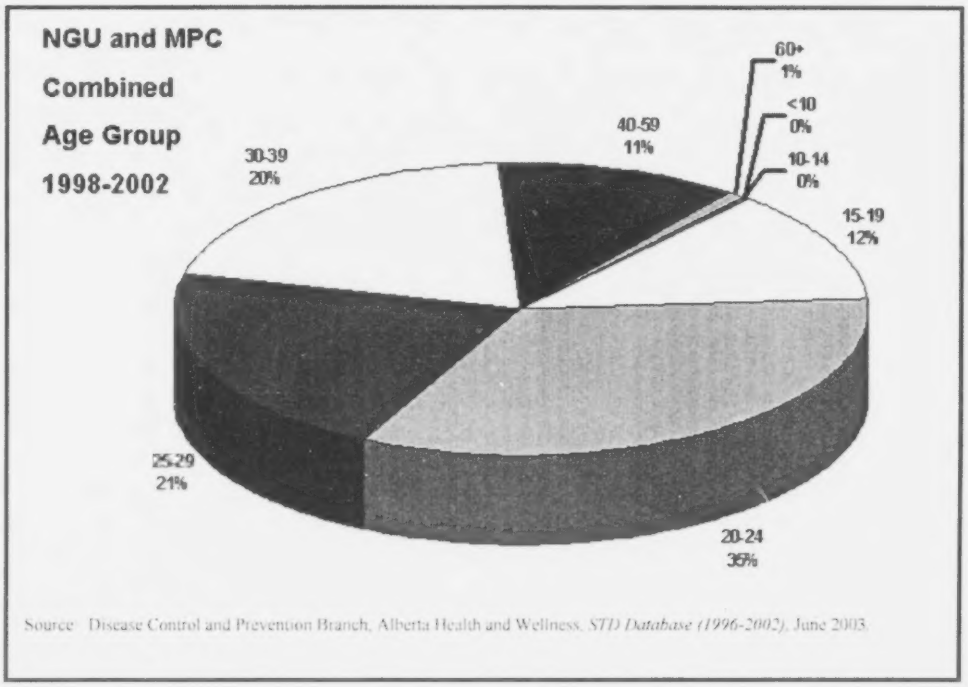
| MPC Female | 1998 | 1999 | 2000 | 2001 | 2002 | Total |
|---|---|---|---|---|---|---|
| <1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 1-4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5-9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10-14 | 3 | 6 | 0 | 9 | 5 | 23 |
| 15-19 | 196 | 221 | 185 | 172 | 198 | 972 |
| 20-24 | 274 | 269 | 231 | 224 | 267 | 1,265 |
| 25-29 | 129 | 138 | 133 | 99 | 109 | 608 |
| 30-39 | 119 | 101 | 110 | 94 | 108 | 532 |
| 40-59 | 43 | 32 | 34 | 34 | 49 | 192 |
| 60+ | 2 | 1 | 0 | 0 | 0 | 3 |
| Unknown | 4 | 7 | 4 | 5 | 10 | 30 |
| Total | 770 | 775 | 697 | 638 | 746 | 3,626 |

| NGU Male | 1998 | 1999 | 2000 | 2001 | 2002 | Total |
|---|---|---|---|---|---|---|
| <1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1-4 | 1 | 1 | 0 | 0 | 0 | 2 |
| 5-9 | 0 | 0 | 0 | 0 | 1 | 1 |
| 10-14 | 2 | 1 | 2 | 5 | 2 | 12 |
| 15-19 | 136 | 187 | 203 | 186 | 222 | 934 |
| 20-24 | 623 | 600 | 572 | 620 | 659 | 3,074 |
| 25-29 | 441 | 446 | 413 | 411 | 461 | 2,172 |
| 30-39 | 416 | 441 | 414 | 372 | 412 | 2,055 |
| 40-59 | 263 | 221 | 229 | 232 | 260 | 1,205 |
| 60+ | 17 | 18 | 12 | 13 | 13 | 73 |
| Unknown | 12 | 23 | 19 | 19 | 12 | 85 |
| Total | 1,911 | 1,938 | 1,864 | 1,858 | 2,042 | 9,613 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

## Appendix M

### Proportion of Reported NGU and MPC Infections by Age Group, Alberta, 1998-2002




Source: Disease Control and Prevention Branch, Alberta Health and Wellness. *STD Database (1996-2002)*, June 2003.

## Appendix N

### Number of Reported NGU and MPC Infections by Health Region, Alberta, 1998-2002

| Health Region | | 1998 | 1999 | 2000 | 2001 | 2002 | 5 Year Total |
|---|---|---|---|---|---|---|---|
| 1 | Chinook | 62 | 103 | 82 | 78 | 78 | 403 |
| 2 | Palliser | 31 | 43 | 58 | 51 | 54 | 237 |
| 3 | Headwaters | 81 | 95 | 87 | 82 | 75 | 420 |
| 4 | Calgary | 902 | 990 | 871 | 822 | 1,004 | 4,589 |
| 5 | Health Auth. #5 | 20 | 17 | 28 | 17 | 28 | 110 |
| 6 | David Thompson | 219 | 169 | 154 | 136 | 138 | 816 |
| 7 | East Central | 41 | 48 | 43 | 48 | 38 | 218 |
| 8 | Westview | 27 | 22 | 14 | 16 | 24 | 103 |
| 9 | Crossroads | 33 | 31 | 32 | 33 | 33 | 162 |
| 10 | Capital | 858 | 739 | 704 | 669 | 845 | 3,815 |
| 11 | Aspen | 36 | 45 | 37 | 39 | 19 | 176 |
| 12 | Lakeland | 52 | 64 | 57 | 66 | 57 | 296 |
| 13 | Mistahia | 51 | 34 | 40 | 53 | 59 | 237 |
| 14 | Peace | 13 | 24 | 30 | 35 | 33 | 135 |
| 15 | Keeweetinok Lakes | 31 | 17 | 23 | 20 | 22 | 113 |
| 16 | Northern Lights | 131 | 182 | 187 | 192 | 141 | 833 |
| 17 | Northwestern | 50 | 37 | 55 | 57 | 43 | 242 |
| | Unknown | 43 | 53 | 59 | 82 | 92 | 329 |
| Annual Provincial Rate | | 2,681 | 2,713 | 2,561 | 2,496 | 2,783 | 13,234 |

Source: Disease Control and Prevention Branch, Alberta Health and Wellness, *STD Database (1996-2002)*, June 2003.

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